

THE EARLIER NEOLITHIC IN CENTRAL EUROPE:

A STUDY OF THE LINEAR POTTERY CULTURES AND THEIR RELATIONSHIPS  
WITH THE CONTEMPORARY CULTURES OF SOUTH-EAST EUROPE.

by

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## CONTENTS

Acknowledgements	i
Introduction	iv

### Part I 13

Features of the Linear Pottery cultures which have been derived with little change from the early neolithic cultures of south-east Europe.

#### Chapter I 4

The distribution of painted pottery in central and south-east Europe in the early neolithic period.

#### Chapter II 66

A short comparative study of the flint industries of the mesolithic and early neolithic cultures of central and south-east Europe.

#### Chapter III 126

Archaeological evidence for the early domestication of animals and cultivation of plants in south-west Asia and south-east and central Europe

### Part II 160

Features exclusive to the Linear Pottery cultures and which are the result of the adaptation of the early agriculturalists from south-east Europe to the temperate environment of central Europe

#### Chapter I 164

The settlements and houses of the Linear Pottery cultures of temperate Europe

Chap



Chapter II	193
The economic pattern of semi-shifting and cyclic agriculture south-east Transilvania on the subsequent	
Chapter III	203
Disappearance from the material culture of the Linear Pottery settlements of features which are characteristic of the tell settlements of south-east Europe	
Chapter IV	227
An analysis of the forms and decoration of the Linear Pottery cultures	
Conclusion	
Part III	272
<u>A description of the development, expansion and interrelationships of the Linear Pottery cultures.</u>	
Chapter I	278
The early phase of the Linear Pottery cultures	
Chapter II	307
The middle phase of the Linear Pottery cultures	
Chapter III	369
The later phase of the Linear Pottery culture	
Part IV	389
<u>The influence and effect of the Linear Pottery cultures of temperate Europe on the later neolithic cultures of south-east Europe</u>	
Chapter 1	392
The influence of the middle phase of the Linear Pottery culture of the Alföldi on the painted pottery of Transilvania	

The influence of the Linear Pottery culture of Moldavia  
Muntenia and south-east Transilvania on the subsequent  
development of the Boian/Pre-Cucuteni culture

The effect of the Linear Pottery culture of south-west  
Hungary and north Yugoslavia (Croatia) on the incised ware  
of the later neolithic cultures of central and west  
Yugoslavia (Bosnia and the Adriatic coast)

## (VOLUME II)

Map I: Distribution of the earliest agricultural settlements

Map I: in central and south-east Europe

Key to Map II

Map II: Distribution of painted pottery in Europe in the early  
fifth millennium b.c.

Key to Map III

Map III: Central and south-east Europe in the early fifth  
millennium b.c.

Key to Map IV

Map IV: Central and south-east Europe in the late fifth millennium

Key to Map V

Map V: South-east Europe in the early 4th millennium b.c.

Key to Map VI

Map VI: South-east Europe in the mid-fourth millenium b.c.

Chart I : Evidence for the Absolute Chronology from Carbon 14 samples

Chart II: Evidence from the settlements of the Linear Pottery culture for surface houses

### Catalogue

I Evidence from the sites of the early phase of the Linear Pottery Cultures

II Evidence from the sites of the middle phase of the Linear Pottery cultures

III Evidence from the neolithic settlements of Transilvania (N.W. Rumania)

IV Sites concerned in the development of the Boian/ Pre-Cucuteni cultures of east Rumania, Moldavia and Ukraine

### Illustrations

### Photographs

### Index of tables in the text

Table 1:

Distribution of the different types of painted pottery in the earliest neolithic cultures of south-east and central Europe

Table 2

Distribution of the different types of painted pottery in the early Linear Pottery culture

Schemes for the relative chronology of the Linear Pottery Cultures.

63

64

Analysis of the animal bone material from Argissa, Otzaki,  
and Arapi magula in Thessaly

Percentages among the domestic animal bones at Argissa,  
Otzaki and Arapi

Analysis of the animal bone material from Karanovo I-II-  
Iv layers at Devetaki cave in north-central Bulgaria

Analysis of the animal bone material from the Koros culture  
settlement of Maroslele (Pana)

Analysis of the animal bone material from Bodzaspart

Analysis of the animal bone material from the sites of the  
Linear Pottery Culture I

" National Museum Dr. Jiří Hroch " II

" City Museum Dr. Herbert Dress

" Institute of Archaeology Dr. Bohuslav Hroch, Dr. Rudolf Hroch

" Slavski Museum " " III

Nitra Institute of Archaeology Dr. Anton Tóth

Between 265-266

Table 11 Decoration of the Linear Pottery Ist Abstraction

Table 12 Museum, Újváros Museum etc. " 2nd Abstraction

Table 13 " at Bakonyfő " 3rd Abstraction

Table 14 " " Supplementary

Dr. Nándor Halász, after 269

Schemes for the relative chronology of the Linear Pottery  
Cultures.



Szeged Museum Dr.Alojz Balint , Dr.Oto Trogmayer  
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## Scope of the Study

The scope of the study in geographical terms is restricted with the region east of the Rhine as far as the historical boundary separates the northern and southern settlements as far west as the lower Rhine, and the middle courses of the Elbe, Oder and Vistula rivers, and for comparative purposes as far south as central France and south-west Germany. The study is not limited, however, to the river basins of the Rhine, Elbe and the Carpathians, but also from the Alps and the Carpathians.

Chronologically, the study begins with the earliest development of agriculture in the Near East and ends with the beginning of modernity in the Carpathian area, that is from approximately 7000 B.C. to 1800 A.D. However, the study is concerned especially with the earliest agricultural communities of south-east and central Europe, and the immediate subsequent development of these, as that chronologically is concentrated in the period 4000 - 3000 B.C.

## Geographical Description

The river Danube starts in the western Alps, in the region of south-east Germany known as Wurtemberg. It flows eastward through a relatively narrow valley until the "Vienna Gate", when it is joined by the large river Rhine which flows from the west. The Danube, in the middle course, the Danube, and the tributary the Tisza, have each an important floodplain basin separating the Alps from the Carpathian mountains. The middle course of the river is separated from the lower section by the narrow gorge made by the hard underlying rocks at the "Iron Gate", and flowing eastwards, the Danube separates the eastern Carpathians from the Balkan range of mountains of Bulgaria and Yugoslavia, and flows through a large delta into the Black Sea.

The accumulated deposits for much of the length of the Danube basin, and that of its tributaries consist of wind-blown loess, deposited under favourable conditions during the late glacial and immediate post-glacial conditions. Deposits also occur in the basins of the large rivers, such as the Rhine, Elbe, and southern Danube, which flow from the northern edge of the Carpathians to the Black Sea, and in the upper basins of the Elbe, Oder and Vistula, which flow from the northern edge of the Carpathians to the Baltic and the North Sea. (Butzer, 1963, Fig. 86).

## 1) Scope of the thesis

The scope of the thesis in geographical terms is concerned with the region east of the Rhine as far as the Dniester basin; it discusses the earliest agricultural settlements as far north as the lower Rhine, and the middle courses of the Elbe, Oder and Vistula rivers, and, for comparative purposes, as far south as central Greece and south-west Anatolia. The study is concentrated, however, in the basin of the river Danube and its tributaries which flow from the Alps and the Carpathians.

Chronologically, the thesis begins with the earliest development of agriculture in the Near East and ends with the beginning of metallurgy in the Carpathian area, that is from approximately 7500 b.c. to 3500 b.c.; however, the study is concerned especially with the earliest agricultural communities of south-east and central Europe, and the immediate subsequent development of these, so that chronologically it is concentrated in the period 4500 - 3800 b.c.

## 2) Topographical description

The river Danube rises in the western Alps, in the region of south-west Germany known as Wurttemberg; it flows eastwards through a relatively narrow valley until the "Vienna Gates", when it is joined by the large river Morava which flows from the western Carpathians; in its middle course, the Danube, and its tributary the Tisza, have made an important lowland basin separating the Alps from the Carpathian mountains. The middle course of the river is separated from the lower course by the narrow gorge made by the hard underlying rocks at the "Iron Gates". Still flowing eastwards, the Danube separates the eastern Carpathians from the Balkan range of mountains of Bulgaria and Yugoslavia, and flows through a marshy delta into the Black Sea.

The underlying deposits for much of the length of the Danube valley and that of its tributaries consist of wind-blown loess, deposited under periglacial conditions during the late glacial and immediate post-glacial period; loess deposits also occur in the basins of the large rivers, such as the Prut, Dniester, and southern Bug, which flow from the northern edge of the Carpathians to the Black Sea, and in the upper basins of the rivers, such as the Elbe, Oder and Vistula, which flow from the northern edge of the Carpathians to the Baltic and the North Sea. (Butzer, 1965, fig. 80).



Loess deposits do not occur south of the Danube basin; except for one or two large rivers, such as the Maritsa and Struma in south Bulgaria, and the Vardar in south Yugoslavia, and the narrow coastal plain of the Aegean coast, most of south-east Europe (the Balkan peninsular) consists of high bare dry mountains,

The middle Danube valley, which is the part referred to the most frequently in this study, consists of a wide loess plain west of its right bank known as the Pannonian Plain or Little Hungarian Plain, and a larger loess plain east of its tributary the Tisza, known as the Great Hungarian Plain (Alföld); between the Tisza and the Danube, there is an alluvial area which was hardly settled in the period with which this study is concerned.

### 3) The natural environment of central and south-east Europe.

In Europe, east of the Alps, during the period 5000 - 3000 b.c., that is in the Atlantic climatic period (pollen zone VII a), it is possible to distinguish two basic ecological regions, with differing climates, geology, and vegetation.

The two regions are divided roughly by the Danube below its bend at Osijek in north Yugoslavia: the central European, north of the Danube, having a temperate, humid climate;

the south-east European, south of the Danube, having a sub-tropical, Mediterranean, humid to sub-humid climate;

a transitional regional in between.

The loess lowlands form one of the conspicuous characteristics of the geology of the central European temperate region, whereas loess is markedly absent in south-east Europe. Some of the central European loess is still covered with the rich, fertile, basic chernozem soil; during the Atlantic climatic period, when the climate was rather wetter than modern times, and the forest covering was largely preserved, the distribution of chernozem soil must have been very much greater, as is indicated on many prehistoric sites of the area.

Except for the narrow coastal belt of sub-tropical woodland of the Mediterranean coast, and the high mountain flora, the natural vegetation of Europe is deciduous and mixed forest; but, because of the differing climatic and geological background, the density and dominant species of vegetation vary with each region.

On the loess lands of temperate central Europe, although during the Atlantic climatic period the climate was warmer and wetter than at present,

the soil was very permeable, and, in some of the drier basins, such as the Great Hungarian Plain (Alföld) and the Bohemian-Moravian plain, the loess soils would have supported open oak woodland; in the moister loess basins, however, the natural vegetation would have been thicker oak woodland grading to forest. (Butzer, 1965, 446-447).

The difference between the two ecological regions, especially the Mediterranean woodland and the temperate woodland of the drier loess basins, would not have been so great as to discourage or impede colonisation from one region to the other; rather the contrary, in fact: the temperate woodlands must have seemed to colonists from the Mediterranean region to be a natural continuation of their native woodlands, with rich soil underneath.

The difference, as Butzer remarks, is "in degree rather than in kind," especially with increasing latitude. (Butzer, 1965, 449). The winters of temperate Europe, even in the Atlantic climatic period, were definitely colder than those further south, the summers were wetter, and the hours of sunshine per annum were less.

Thus, some form of conscious or unconscious adaptation and response to the natural environment of temperate Europe was inevitable for colonists whose economy and material culture had been developed in a more southern natural region.

#### 4) History of research in the problems of the early prehistory of central and south-east Europe.

The first and only prehistory specifically of the Danube valley was written by V. Gordon Childe in 1929; this consisted of a synthesis of the material found in the regions described above, and their interpretation in human terms, or, as the Americans prefer it, in terms of human dynamics. Such a synthesis has not been attempted since, even though the mass of material and hypotheses which accompany it must have increased a hundredfold since then. (Childe, 1929).

The various "Chronologies" of Vladimir Milošević do synthesise the material of this region to a certain extent, and chronologically correlate the material of each area; but they could hardly be called prehistory, since very few aspects of the material culture, besides pottery and other tangible features, are referred to, and there is very little interpretation of the material in human terms. (Milošević, 1949 a; 1959 c, 68-84).

Although there have been monographs published concerning specific cultures, such as the Starčevo and Vinča cultures, these have all been based on a detailed analysis of one region rather than a detailed analysis of the material of all regions of the culture. (e.g. Garašanin, M., 1951; Garašanin D., 1954).

east Europe.

Before these problems and their significance can be understood, however, it is necessary to provide the background in an analysis of the Linear Pottery culture itself. For the sake of completeness, it has been thought more satisfactory to include the Linear Pottery cultures of all regions and phases in this analysis, so that the problems may be seen in the true perspective of their relative position in the earlier prehistory of central and south east Europe.

The first two parts of the study describe the features of the material culture of the Linear Pottery cultures as a whole ; in their European setting, and especially in relation to their prototypes in south-east Europe and their adaptation in temperate central Europe.

The third part brings together all these features, and arranges them historically with reference to the internal development of the Linear Pottery cultures in time and space, and their relationships with each other and with neighbouring cultures; this part may be said to describe the dynamics of the Linear Pottery populations.

The fourth part represents the original purpose of the thesis, for which, in effect, the first three parts are the preparatory basis; this is to analyse the long-term effect of the Linear Pottery cultures on the subsequent developments of the later neolithic and even copper-using cultures of south-east Europe.

The last two parts are obviously based on specific material from a large number of sites; it would clearly be unnecessarily laborious, lengthy, and of little value to describe this material in detail; the text consists of putting forward the main trends in development and content of the material culture; the actual source of evidence is expressed in chart form and catalogues at the end of each chapter, and by illustrations and distribution maps at the end of the text.

Chapter I Distribution of painted pottery	4
A) The circum-Mediterranean region	4
1) Anatolia	6
<u>PART I</u>	9
2) Bulgaria	13
<u>Features of the Linear Pottery cultures which have been derived</u>	16
<u>with little change from the early neolithic</u>	25
<u>cultures of south-east Europe.</u>	29
2) South-east Hungary (Körös)	30
3) South-west Rumania (Starcevo-Körös)	33
4) South-Rumania (Cris)	37
5) North-east Rumania	38
6) Ukraine and Moldavian SSR (Southern Bug I)	41
7) North-west R and central Rumania	42
C) Painted Pottery of the Linear Pottery culture	47
Starcevo-Körös type	55
Esster type	59
Combined painted and incised	66
Summary	66
Chapter II The flint industries of mesolithic and neolithic Europe	66
A) Microlithic elements in Europe and W. Asia	66
1) Near East	71
2) South-east Europe	80
3) Temperate Europe	92
B) Industries associated with early agriculturalists	92
1) Near East	94
2) Greece, Bulgaria and Yugoslavia, Rumania	99
3) Linear Pottery cultures	122
Summary	126
Chapter III Early domestication and cultivation	126
1) Early cultivation of cereal crops	128
2) Early domestication of animals	132
3) Economy of early farmers in south Europe	137
4) Economy of early farmers in central Europe	148
Summary	



## Contents

2.

<u>Chapter I</u>	Distribution of painted pottery	4
A)	The circa-Mediterranean region	4
1)	Anatolia	
2)	Greece	6
3)	Bulgaria	9
4)	Yugoslavia(Starcevo and Starcevo-Koros)	13
B)	Transitional region	16
1)	North Yugoslavia(Starcevo-Koros)	
2)	South-east Hungary(Koros)	25
3)	South-west Rumania (Starcevo-Koros)	29
4)	South-Rumania(Cris)	30
5)	North-east Rumania	33
6)	Ukraine and Moldavian SSR(Southern Bug I)	37
7)	North-west R and central Rumania	38
C)	Painted Pottery of the Linear Pottery culture	41
	Starcevo-Koros type	42
	Esztar type	47
	Combined painted and incised	55
	Summary	59
<u>Chapter II</u>	The flint industries of mesolithic and neolithic Europe	66
A)	Microlithic elements in Europe and W.Asia	66
1)	Near East	66
2)	South-east Europe	71
3)	Temperate Europe	80
B)	Industries associated with early agriculturalists	92
1)	Near East	92
2)	Greece, Bulgaria and Yugoslavia, Rumania	94
3)	Linear Pottery cultures	99
	Summary	122
<u>Chapter III</u>	Early domestication and cultivation of the	126
1)	Early cultivation of cereal crops	126
2)	Early domestication of animals	128
3)	Economy of early farmers in south Europe	132
4)	Economy of early farmers in central Europe	137
	Summary	148

## INTRODUCTION

It will be shown, at the outset, that the dispersal of agricultural, ceramic and related techniques to central Europe from the Mediterranean area is the result of the expansion of actual colonists from the south, with perhaps a certain amount of acculturation of the indigenous mesolithic hunting/fishing population; it is not the result merely of the indigenous mesolithic /epipalaeolithic communities' cultural borrowings from more advanced communities further down the Danube river, nor, as some have mused, of the independant autochthonous development of agriculture and pottery-manufacture by the Mesolithic population. (Schlitz, 1901; Menghin, 1924, 774; Grbić, 1957, 61; 1959, 11-16; Pittioni, 1961, 213).

To endeavour to prove this, it will be necessary to trace the cultural elements which the earliest agricultural communities in the temperate regions of Central Europe have in common with their contemporaries of the Mediterranean woodlands.

The three most important elements concerned, are the forms and decoration of pottery, the stone and flint industries, and the agricultural economy and techniques. All of these elements are intrusive when they appear in Central Europe, and yet are basic elements of the contemporary and earlier neolithic cultures of south-east Europe.

## CHAPTER II

### The Distribution of Painted Pottery in Central and South-East Europe in the Early Neolithic Period

Among the pottery of the earliest agricultural communities of south-east Europe, that is of modern Greece, Bulgaria and Yugoslavia, there are three basic groups: a) thick, coarse pottery, decorated by nail - and finger-impressions etc.

b) finer, chaff-tempered grey/buff/red ware, mostly undecorated, with a smooth, often burnished, surface.

c) fine, hard yellow/red pottery with a thick red or white polished slip; the slip itself is very commonly decorated before baking with black or white painted patterns on the red slip and red painted patterns on the white slip.

It is the last group which is to be discussed in this section, since it is very characteristic in the material culture of the settlements of south-east Europe in this period, and a very uncharacteristic and intrusive feature in central Europe, and therefore all the more interesting when it does appear there.

#### A) The light forested zone of the circa-Mediterranean region south of the Danube river.

1) Anatolia: the characteristic pottery of the late Neolithic culture of S.W. Anatolia, as seen in layers IX-VI at Hacilar is the so-called 'Variegated' or 'Rainbow' ware, that is fine, hard, thin burnished ware, with its surface colouring varying from greys to buffs and reds, but undecorated. (Mellaart, 1965, 107).

The/

The Early Chalcolithic is represented in Levels V - I at Hacilar.

The development of fine cream/white slipped pottery with red-painted rectilinear designs is especially characteristic, and reaches its climax in Level IIa, when curvilinear patterns also appear. (Mellaart, 1960, 92-104; 1965, 107, 110) Shapes include S-profile bowls, globular pots with cylindrical necks, and anthropomorphic pots known as 'Toby-jugs'. West and south of Hacilar, especially on the coast, painted ware of this type does not occur; here the monochrome red-burnished ware of the Late Neolithic culture continues.

However, the painted ware which develops in Hacilar Level I is more widespread (Mellaart, 1958, 135-144; 1960, 92-104; 1965, 108, 112-113). After the destruction level of layer II at Hacilar, painted ware, especially cream-slipped ware with red-painted rectilinear and curvilinear patterns, continues, but the shapes of the pots are rather different; there are more oval and square-shape pots which have neither the sophistication nor the quality of manufacture of those of Level II (Mellaart, 1965, 113). In Level I there appears, for the first time, a few sherds of red pottery painted with white curvilinear and rectilinear designs.

Carbon-14 dates from Hacilar are very important in connection with the relationships between the early painted pottery of S.W. Anatolia and the Balkan peninsula (Mellaart, 1961A, 74):

<u>Hacilar</u>	end Level VI, destruction layer	5390 $\pm$ 85 b.c. P 313a
	Level IIa	5210 $\pm$ 134 b.c. P 316
	Level Ia	5030 $\pm$ 121 b.c. P 315 ( <u>Radiocarbon IV</u> , 1962, 145)



2) Greece: It is an accepted theory by now that the earliest agricultural communities in Greece are represented by an aceramic, or pre-ceramic neolithic culture, based on evidence from the lowest layers of a number of tells in Central Greece and Thessaly, etc. (Milojčić, 1956, ; 1960, 320-335). It is an equally accepted theory, from the many analogies in S.W. Anatolia, that the pottery traditions of the Greek neolithic were not an indigenous development, but represent probably actual intrusive colonists from the West Asian mainland, perhaps via the Aegean islands.

The earliest pottery on the Greek mainland is of the red-, buff-, or brown-slipped burnished 'variegated' type, resembling especially the pottery from Hacilar VI-V, Late Neolithic. There is no pottery of the Early Neolithic type as seen in C. Anatolia at Çatal Hüyük for example (Mellaart, 1961b, 159). In Thessaly, this 'Variegated' ware represents the culture known as Proto-Sesklo, as seen at Otzaki Magula (Milojčić, 1955, 157-182).

As on the Anatolian coast, monochrome pottery seems to have been retained long in the traditions of the Greek early Neolithic cultures, at least in central Greece, and probably also Thessaly; for although on some sites such as Elateia (Weinberg, 1962, 167-172), and Nea Makri (Theocharis, 1956, 8-16) in Central Greece, and Gremnos in Thessaly (Milojčić, 1956b, 142-183), painted red-on-cream sherds do appear at the end of the Early Neolithic, or Proto-Sesklo levels, the bulk of the painted pottery does not occur until the Middle Neolithic levels of the Greek tells, which at Elateia is dated by C-14 to 5080 B.C. (Weinberg, 1962, /

1962, 172-196; Mellaart, 1965, 116). In the Greek tell settlements, with the exception of Otzaki magula (Milojčić, 1955, 157-182), the Middle Neolithic painted pottery culture, or Sesklo culture as it is known in Thessaly, is stratified immediately above the Early Neolithic 'Variegated' ware culture, and must represent continuous settlement.

The Middle Neolithic painted pottery of Central Greece and Thessaly is mostly of the red-on-cream type with rectilinear and curvilinear patterns, but the presence of a small quantity of white-on-red painted ware at a number of sites points to analogies with Hacilar I, when the manufacture of painted ware also became more widespread in Western Anatolia.

The shapes of the painted pots of the Greek Middle Neolithic culture, include globular pots with cylindrical necks and low cylindrical pedestal bases, and hemispherical bowls, which are perhaps more reminiscent of levels II-IV at Hacilar, and are presumably developed from the previous Early Neolithic 'Variegated' ware pots.

Carbon 14 dates from the central Greek Site of Elateia, show a long duration of the Early Neolithic 'Variegated ware' culture, quite unlike the evidence from Hacilar; the date for the Middle Neolithic painted pottery culture is contemporary with that for Hacilar Ia, and with a number of early painted pottery sites in Yugoslavia and Greece (see overleaf).

Elateia,

Elateia, Boeotia, C. Greece (formerly Drakhami):

Early Neolithic, c.f. Proto-Sesklo	5520 $\pm$ 70 b.c.
	5400 $\pm$ 90 b.c.
	5230 $\pm$ 100 b.c.

Middle Neolithic c.f. Sesklo 5080  $\pm$  130 b.c. GRN 3502  
(Weinberg, 1962, 172-196)

In Greek Macedonia, there is little evidence for a long phase with the presence of monochrome red/buff/brown burnished ware, but little systematic excavation has been undertaken on the Macedonian tells in comparison with Central Greece and Thessaly. Most of the monographs on the Macedonian Neolithic are based on surface finds and trial excavations (Heurtley, 1939; Rey, 1917-1919, 264-280).

At Nea Nikomedea, however, it is possible to see from the stratigraphy that painted red-on-cream and white-on-red sherds appear in the earliest level together with rusticated nail- and finger-impressed ware and fine buff/red monochrome burnished ware. (Rodden, 1964a, 109; 1964b, 564). Red-on-white painted pottery is widespread among the other Macedonian tells, and it is obvious from the decoration and forms of the pots that this ware is connected very closely to that of the Sesklo culture in Thessaly. White-on-red painted sherds are not common in Macedonia, but their very presence is enough to confirm a contemporaneity of the early Neolithic culture of Macedonia and the Sesklo culture of Thessaly.

The Carbon 14 date from the lower layer of Nea Nikomedea representing this/

this early Neolithic culture at 6220 $\pm$ 150 b.c. seems unreasonably early in the face of all the evidence from Anatolia and Greece, and for the purpose of this study will be disregarded.

3) Bulgaria: Wherever the settlements with early neolithic painted pottery occur in Bulgaria, they form the basal layers of the "tell" settlements. The earliest food-producing communities are represented in Bulgaria by the Karanovo I culture, named after the basal layer of one of the largest tells in south Bulgaria. (Georgiev 1961, 57-65). The name refers generally to the culture as seen in the settlement of the Maritsa river basin in south Bulgaria; here, the fine pottery is almost invariably covered with a thick red slip and decorated with geometric, rectilinear and curvilinear patterns painted in white paint; one of the very characteristic pot forms of this painted ware is the tulip-shaped pot on a cylindrical pedestal foot. (Georgiev, 1961, 63). There are very rare examples of white slipped pottery decorated with red-painted patterns, such as one or two sherds from the tell-site Račev, near Yambol on the Tundža river. (Jerome, 1901, 342; Petkov, 1929, 185).

In west Bulgaria, that is in the plain surrounding Sofia, a variation of the Karanovo I culture is often referred to as the Kremikovci culture. (Petkov, 1929, 185-199; 1962, 43). This region is the watershed area of the river Struma running south to the Mediterranean Sea and the river Isker running north to the Danube river; like the Vardar/Morava watershed area of Central/

It would seem, therefore, at least in west Bulgaria, that the "light-on-dark" painting is a later development or introduction than the "dark-on-light" painting.



Central Yugoslavia, the material culture of this region displays very mixed influences and elements. All variations of the early neolithic painted pottery of south-east Europe occur on the sites of west Bulgaria. However, amongst the fine pottery, that with a red slip predominates; but only on one site does decoration by white - painted patterns occur by itself; at Mursalevo, on the upper Struma river, south-west of Sofia (Petkov, 1962, 43; Gaul, 1948, 12-13). On the majority of sites, decoration by white- and black-painted patterns occurs together on the same site; (Bukhovo, Čelopeč, Kremikovci, Milkovitsa, Rebrovo, Slatina) or the fine red-slipped ware is decorated only by black-painted patterns (Dolni Lozen, Kurilovo, Nevestino, Priboyi). White-slipped pottery decorated with red-painted patterns occurs on only two sites: Kremikovci, the type, site, on the upper Isker river (Petkov, 1929, 185-199; Propov 1921, 6) and Slatina.

Recent excavations carried out on the tell-site of Slatina, on the upper Isker river have given very interesting evidence as to the stratigraphical position of the different types of early neolithic painted pottery in west Bulgaria, (Petkov, 1959, 100-105; 1961, 64; 1962, 43). Within the level representing the Kremikovci/Karanovo I/II culture, two layers were distinguished: in the lower layer the fine pottery was covered with a red or white slip, and decorated in each case by patterns painted in a darker colour; red-on-white or black-on-red. In the upper layer, these varieties continue, but the red slipped ware is also decorated by white-painted patterns. It would seem, therefore, at least in west Bulgaria, that the "light-on-dark" painting is a later development or introduction than the "Dark-on-light" painting.

The/

The painted patterns include rectilinear and curvilinear styles, even spirals at Kremikovci etc., and are very similar to those of south Bulgaria on the one hand, and central and south Yugoslavia on the other. The shape of the pots are more towards those of Macedonia and Yugoslavia than south Bulgaria, the tulip-shaped pots being far less common than the lower globular/hemispherical bowls; the cylindrical pedestal feet tend to be lower than those of the south Bulgarian pots.

The early neolithic sites of north Bulgaria are similarly differentiated between west and east. North Bulgaria, even taking into account less intensive excavation and survey, must have been very sparsely inhabited compared to the southern half of the country in the early neolithic period, and, at least in north-west Bulgaria, settlement by agriculturalists appears to have been a later phenomenon than in the south; this would be a logical supposition anyway, if one accepts that colonisation was in a south to north direction.

North-east Bulgaria has, so far, produced only one site with material similar to the Karanovo I culture, at Preslav, just south of Kolarovgrad (the old Šumen) on the northern edge of the Stara Planina mountains, which cut Bulgaria in half, stretching continuously from west to east. The site is unpublished, but Georgiev excavated red-slipped ware decorated with white-painted patterns (Comşa, 1962, 73 no. 67; Petkov, 1962, 43).

In north-central Bulgaria, there are a series of settlements in the caves of the northern edge of the Stara Planina mountains; Devetaki cave, on the river Osem, has produced red-slipped pottery painted with white patterns (Mikov and Džambazov, 1960, 33-47); the Tabaska cave at Lovec, just/

just south of Devetaki, has red slipped pottery decorated with black and white paint in equal quantity and includes a very clear white-painted spiral (Džambazov, 1963, 223-228).

Bogdan Nikolov considers the early neolithic settlements of north-west Bulgaria to be later than those of south and west Bulgaria, and that they are contemporary more with Karanovo II than with Karanovo I. (Nikolov, 1962, 65). In the Vratsa district, of the lower Isker valley, the fine pottery is covered with red slip and decorated with black-painted patterns, nearly always rectilinear patterns, e.g. Banitsa, Gorna, Bešovitsa, Kunino, Tsakonitsa, Rebrovo. (Mentioned in conversation by B. Nikolov in Vratsa August 1965 and partly published: Nikolov, 1962, 65). The settlements along the Danube, e.g. Kozloduj, Tsibir, Varos, Vidbol, and Yasen, have produced very little fine pottery, and no painted pottery. (Čilingirov, 1911, 145-174).

The Karanovo I culture has been dated by the C-14 method from samples from Azmak, south Bulgaria (Georgiev, 1963, 157-176; 1965, 6-8):

Karanovo I	1	5208 $\pm$ 150 b.c.	Bln 291
		4808 $\pm$ 100 b.c.	Bln 267
end Karanovo I		4708 $\pm$ 150 b.c.	Bln 224

The development of Karanovo I culture, known as Karanovo II (Mikov Karanovo Ib) has been dated from samples from Karanovo itself:

Karanovo II	4623 $\pm$ 100 b.c.	Bln 201	
	4550 $\pm$ 150 b.c.	Bln 234	
	4857 $\pm$ 100 b.c.	Bln 152	Av. 4676 $\pm$ 115

(The Dates are to be published by H. Quitta in Radiocarbon VIII(1966). )

4) Yugoslavia: In spite of various claims for an aceramic neolithic culture on some of the Yugoslav sites e.g. Crvena Stijena in Montenegro, (Benac, 1958, 21-64), it seems that, in the light of the present evidence, the earliest agriculturalists in Yugoslavia are represented by the culture with painted pottery named after a site on the Danube Starčevo.

In south Yugoslavia, that is the republic of Macedonia which borders onto Greece and Bulgaria, the fine ware is covered with a red slip; white slipped ware has hardly been found in Macedonia.. Decoration is predominately by black-painted patterns, as in west Bulgaria, although, as in west Bulgaria and Greek Macedonia, white-painted patterns do occasionally occur on the same sites, but never alone (Garašanin, M., 1958, 111-112; 1959, 2 ); e.g. Vršnik near Štip (Garašanin M., and D., 1961, p. 39) and Zelenikovo on the river Vardar (Galović, 1962-63, 11-29). The patterns are rectilinear and curvilinear; the shape of the pots includes the hemispherical/globular bowls on low cylindrical pedestals which are so typical of the west Bulgarian Kremikovci culture (Petkov, 1929-29, 185-198).

The Starčevo culture of east and central Yugoslavia, including the republics of Serbia and Bosnia, has been classified on a basis of typology of pottery into four phases by Miložčić (Miložčić, 1950, 109-110), and by D. Garašanin into three phases, on a basis of the stratigraphy of pit 5a at Starčevo (Garašanin D., 1954, 136). According to Miložčić, painted and shipped ware is absent from the settlements of Starčevo I, but occurs in Starčevo II with red-slipped pottery decorated with white and black painted patterns; in Starčevo III, the "black-on-red" painted ware becomes dominant, and the "white-on-red" disappears. From this he concludes that the "white/



"white-on-red" appears earlier in Yugoslavia than the "black-on-red" ware. The painted patterns in Starčevo III include curvilinear as well as rectilinear examples, whereas those of Starčevo II are only rectilinear patterns. Starčevo IV sees the decline of the painted pottery technique, when the slip of the pottery is badly executed and unpolished, and the paint is thin and watery, and incised decoration appears for the first time.

As mentioned before, Milojević's is a typological classification, the only supporting stratigraphical evidence being the same pit 5 at Starčevo, as cited by D. Garašanin; each of the other sites to which he refers, are typical of only one phase of the Starčevo culture. (Milojević, 1950, 110-111).

According to the classification of D. Garašanin, Starčevo I is characterised by fine brown/buff ware with a polished, or even burnished surface; Starčevo II is marked by the occurrence of red-slipped pottery with painted decoration in curvilinear and rectilinear patterns, at first with black and white paint equally, and then only black paint; in Starčevo III the same degeneration of pottery sets in, characterised by "barbotine" ware, which is the dominant ware of the Körös culture, north of the Starčevo area; this has caused D. Garašanin to conclude that the Körös culture is contemporary within the end of the Starčevo culture, and the beginning of the Vinča culture (D. Garašanin, 1954, 137).

It must be stressed here the danger of basing the classification of a culture which covers a very large area on the stratigraphy of a single pit on a settlement, especially when the site is on the periphery of the culture area (Fewkes, 1933). Thus, for the purpose of this study, the classification of the material of the Starcevo culture into phases will be treated with a certain/

certain amount of scepticism. Recent excavations have produced more stratigraphical evidence within the Starčevo culture at Tarinci (Vršnik) near Štip in Macedonia (Garašanin M. 1958, 111; 1959, 2; Garašanin M. and D., 1961 pp.39), and at Gračanica (Gladnica) near Pristina in south Serbia (unpublished, with Glišić in Priština Museum). In Vršnik I, the pottery is the coarse, rusticated ware and brownish fine polished ware with one or two sherds of red-slipped ware decorated with white paint; Vršnik II-III is characterised by red-slipped ware decorated by black-painted patterns, although the coarse ware continues; from the small publication extent, however, the stratigraphy of Vršnik seems, as yet, still unclear and unstable.

It seems, therefore, sufficient to point out that in Serbia, E. Yugoslavia, red-slipped ware with white-painted patterns is a very rare phenomenon south of Kragujevac on the lower Morava river (Garašanin M., 1958, 9), and that in central and south Serbia, and Bosnia (C. Yugoslavia), red-slipped ware with black-painted curvilinear and rectilinear patterns predominates e.g. Gornja Tuzla (Bosnia), Bujanj (C. Serbia) etc. (see Garašanin D., 1954, 34-47). White-painted patterns occur with black-painted patterns on the settlements of Banja (Garašanin M. and D., 1951, 50) and Grivac (Tečić) (Galović, 1964, 3-9), both in central Serbia, that is on the lower Morava river, south of the river Danube. The shape of the pots with painted decoration are especially hemispherical bowls, tending to be globular, on low cylindrical pedestals. Serbia north of the Danube will be discussed in the next section. C-14 dates: Gornja Tuzla  $4690 \pm 75$  GRN 2059 (Čović, 1960-61, 132)  
 Vršnik III  $4915 \pm 150$  (Milojčić, 1958, 414)

B)/

B) Transitional Region on the banks and northern basin of the Danube River.

North of the Danube river, as mentioned above, the climatic and vegetational conditions begin to change to those of a temperate, rather than a Mediterranean woodland, and features typical of the latter region, for example painted pottery, begin to disappear.

1) North Yugoslavia (Croatia and Vojvodina (including Srem and Banat)).

The earliest food-producing culture of Yugoslavia north of the Danube/Sava river is obviously a provincial and not a primary version of the early neolithic culture group of south-east Europe; the main area of stimulus of the Starčevo/Karanovo I culture complex, as has been seen, is in Central Serbia, Macedonia, and South and West Bulgaria. Therefore, although the earliest neolithic culture of Croatia and North Serbia must represent an expansion of the Starčevo culture, it is the Starčevo culture as seen in its transitional form towards the even more backward and static Koros culture, which gradually becomes dominant with increasing distance from the primary area in the south. Thus in North Yugoslavia, this transitional culture is referred to as the Starčevo/Körös culture (Brukner, 1960, 104).

Expressed in more material terms, the pottery of the transitional Starčevo/Körös culture is predominantly the coarse rusticated ware, decorated with finger-and nail-impression, and the fine burnished monochrome ware; painted pottery occurs on only 12 of the 30 sites in the region under discussion, as opposed to the primary region of the culture in which painted pottery occurs on almost every site. When painted pottery does occur on the North Yugoslav sites, there is only a very small number of sherds, except one or two sites on the banks of the Danube, such as Starčevo itself; the/

the painted pottery is the same red-slipped fine ware, with patterns painted in black on 8 sites, and painted in black or white equally on 4 sites (GRBIĆ, 1930). The shape of the pots on which the decoration is painted are still predominately the hemispherical/spherical bowl on low or high cylindrical ring pedestals, although flat-bottomed bi-conical pots begin to be more common in this northern periphery of the main culture.

On the banks of the Danube, near its confluence with the Sava at Beograd, there are five sites of the Starčevo/Körös culture which have produced painted pottery:

Starčevo near the village of Pančevo, on the north bank of the Danube, was one of the earliest sites of the culture to be excavated at all systematically, and thus became the type-site of the culture, although it must be remembered that it is one of the northern outposts of the Starčevo-Karanovo I group as seen in its primary form. The material in and around Pit 5 at Starcevo is considered the most important of the excavation, because it is recorded in stratified levels (Fewkes, 1933; Garašanin D., 1954, 88-93.), and on this material D. Garašanin bases her classification of the Starčevo culture in three phases (1954, 136), which is discussed above. It will be seen later that there is possible support from recent excavations of Starčevo/Körös and Körös sites for the hypothesis of pre-painted pottery, painted pottery, and post-painted pottery phases of the culture in this more northern region, but it is dubious whether this hypothesis can be applied to the primary area of the Starčevo-Karanovo I group.

It is sufficient at this stage to say that in its classic phase, one/



one of the distinctive features of the Starčevo culture is painted pottery; if, however, as in the north, there are sites where painted sherds are scarce or absent, this does not necessarily indicate that the site concerned belongs to a late, or post-painted pottery phase of the Starčevo culture, as Milošević and D. Garašanin have proposed (Milošević, 1950, 111; Garašanin D., 1954, 137), but can just as easily represent a local variant, slightly adapted to different physical conditions, more static and isolated from the centre of stimulus; it would be inevitable that in these circumstances the more skilled techniques, such as the manufacture of fine painted pottery, would be the first to be dispensed with or forgotten.

The site at Starčevo, however, is an exception in this region, in having produced a large number of fine red-slipped sherds with painted decoration, although these only came from half the pits on the site:

Pit 4 : 4 sherds white on red: 1 sherd dark on red.

Pit 5a: Latest occupation: 3 sherds black on red.

On and above floor 1:6 sherds dark on red.

Full of pit under floor 1:3 sherds white on red: 6 sherds dark on red (from which some may surmise that patterns painted in white are earlier than those painted in a dark colour).

Bottom of pit; earliest artificial deposit: no painted ware.

Pit 6:44 white on red: 63 black on red.

Pit 7:15 white on red: 4 black on red.

Pit 10:5 black on red

(Garašanin D. 1954, 86-103)

The patterns of the painted decoration are rectilinear and curvilinear; those painted in white are all rectilinear; those painted in black are curvilinear and/

- 4 and rectilinear; and the one or two sherds of polychrome (black with white border on red) are all curvilinear. The rectilinear patterns consist of thick chevrons filled with cross-hatching, parallel vertical thick lines with narrow lines in between, vertical lines extending from rim to base and sometimes forked at the rim, and triangles filled with cross-hatching and suspended from the rim. Curvilinear patterns consist of open or convolute interlocking spirals, with a single or multiple digit ending. The texture of the red-slipped ware with painted decoration is very hard and fine, made of the local unlevigated clay.

Omoltjica is a large settlement site near Starčevo by Pančevo, but produced only one or two sherds of red-slipped ware decorated with black-painted rectilinear patterns. (Garašanin D., 1954, 42; Garašanin M. and D., 1951, 92; Grbić, 1939, Pl.XX-XXIII).

Surface material at the site of Jaša Tomić in Pančevo district includes one or two sherds of red slipped ware decorated with black- and white-painted patterns. (Garašanin D., 1954, 42; Berciu, 1941, 11).

On the south bank of the Danube, by Beograd is the site of Belo Brdo at Vinča. Although disastrously excavated by Vassits, who believed that on a stratified site the material should exhibit cultural change every half-metre or less (Vassits, 1930-36), some of the stratigraphy has been salvaged (Garašanin M., 1951, 61); thus, it is possible to see that the lowest level of the settlement and some of the pits (e.g. B,Z,V, and M) contains material belonging to the Starcevo culture. (Milojčić, 1950, 112). There are at least twelve sherds of red-slipped ware decorated with black-painted rectilinear patterns (Vassits, 1930-36, II 130-133).

5 Near Vinča, is the site of Gardoš at Zemun, in which Schmidt excavated, amongst/

- 4

amongst the Starčevo material, one or two red-slipped sherds with black-painted rectilinear patterns (Schmidt, 1945, 119; Garašanin D., 1954, 39; Garašanin M. and D., 1951, 25).

North of the Danube, on the Tisza river, surface material from a Starčevo culture settlement near Novi Kneževac includes some sherds of black-painted red-slipped ware with rectilinear patterns (Milleker, 1938, 105-106).

Near Subotica, on the Hungarian border is a series of lakes; one of these, probably the oldest, is known as Ludaš; on all the patches of higher, drier ground which rise above the level of the lake all around it, there are small, poor settlements with an economy based mostly on fishing, and with material belonging more to the Körös culture than to the transitional Starčevo/Körös culture. Only three of the many sites around the lake have produced painted pottery:

Nosa (Biserna Obala site) on the eastern side, produced predominately rusticated ware, but also one or two sherds of red-slipped ware with black-painted decoration. (Garašanin D., 1954, 44; Šafarik, 1951, 107-108). The clay-lined storage pits found at this and nearby sites have caused some people to think that they represented an indigenous Mesolithic tradition of the manufacture of unbaked clay pottery. (Grbić, 1954-55; 1957, 141).

6 - 1

On the north-west side of the lake, surface finds from the site of Szelhely near Hajdukovo included one or two sherds of red-slipped pottery with black-painted rectilinear patterns. (Garašanin D., 1954, 44).

Similar surface finds from the site of Budžak on the west side of the lake included one or two black-painted sherds, but the first season of systematic /

systematic excavation in July 1965, did not produce any more examples of painted pottery. (The material of both sites is unpublished, in Subotica Museum with Laszlo Szekeres).

In western Vojvodina, in the region of Srem, painted pottery of the Starčevo/Körös culture occurs only at the site of Baštinte near Obrež, west of Novi Sad. The patterns are curvilinear and rectilinear, painted in black on a red-slipped surface. (Brukner, 1960, 107-108). There are at least 16 sherds of painted pottery, most of which come from hemispherical bowls on flaring pedestal bases; a biconical element can be seen appearing in the profile of some of the bowls, which Brukner regards as an indication of the relatively late position of the Obrež site in the Starčevo sequence (Brukner, 1960, 104). There are even one or two Vinča-Tordoš pots found in association with the Starčevo/Körös painted and rusticated ware. From the stratigraphical evidence in pits 1 and 2 on the site, it can be seen that painted pottery and other features of the Starčevo/Körös culture are present at the beginning of the settlement, and survive with very little change to the beginning of the Vinča culture in Vojvodina; thus, chronological differences are indicated not so much by technological and decorative development in the pottery, as by the presence or absence of the new Vinča culture elements.

On the other side of the Danube from Srem is the republic of Croatia. The Starčevo/Körös culture is represented here by a number of large settlement sites near the Danube and its tributaries. Four of these have produced painted pottery:

Bapska, by the confluence of the Danube and Drava rivers, is a large stratified/



stratified site which was excavated in 1939-40; part of the material belongs to the Starčevo/Körös culture, including one or two sherds of red-slipped ware decorated with black-painted rectilinear patterns. (Schmidt, 1945, 121-125; Garašanin D., 1954, 45).

6:5,6 Sarvaš, another very large stratified site, just west of the Danube/Drava confluence; the material is stratified from the neolithic settlement to the Slavic hill-fort. The lowest layer consists of material belonging to the Starčevo/Körös culture, among which sherds of red-slipped ware decorated with white- and black-painted rectilinear patterns are found in the same layer as early Vinča culture channelled-decorated pottery. However, it has been pointed out that the stratigraphical evidence at Sarvaš is, in fact, very dubious. (Milojčić, 1949, 82-83; Garašanin D., 1954, 45). The patterns of the painted pottery are especially triangles or zig-zag bands made by thick lines, and filled with cross-hatching of thin lines. Most of the material in this lowest layer, however, consists of thick rusticated ware. (Schmidt, 1945, 127-131).

6:2,3 Vučedol, on the south bank of the Danube, between Sarvaš and Bapska, is a stratified site 12 metres high; in the La Tene period and Middle Ages, it was a large fortified settlement, and even in its lowest layer, representing the Starčevo/Körös culture the settlement covered a large area. The Starčevo/Körös material includes three sherds of red-slipped ware, decorated by black-painted rectilinear patterns, similar to those from Sarvas site. (Schmidt, 1945, 8; Garašanin D., 1954, 45).

Vukovar, just west of Vučedol, at the bend of the Danube river, consists of a series of flat unstratified settlements, one of which belongs/

belongs to the Starčevo/Körös culture (Schmidt:Ziegelei Eltz). 350 metres away is a settlement with material of mixed linear pottery and Vinča elements, which will be discussed in a later section. Besides the large number of coarse rusticated sherds, the material from the Starčevo/Körös settlement includes some sherds of red-slipped ware, decorated with black-painted rectilinear patterns like Sarvaš (Schmidt, 1945, 125-6).

The shapes of the fine Starčevo/Körös ware in Croatia are predominately hemispherical bowls on low cylindrical/flaring pedestal bases, and rarely on four-legged stands. Bi-conical forms also appear, as in Obrež.

There is, as yet, no Carbon-14 evidence from any of the north Yugoslav Starčevo/Körös sites, but it is hoped that samples taken from the site of Budžak, near Subotica, will soon be analysed for this purpose.

The Körös/Criș culture (group) obviously represents a northern extension of the Starčevo/Körös group and its equivalents on the north banks of the Danube in south Rumania. The distance, however, in time and especially in space from the centre of stimulus of the Starčevo/Karanovo I group is even greater than in north Yugoslavia; thus, the earliest neolithic culture of south-east Hungary and Rumania presents a very much poorer and more provincial version of the material than that seen in Serbia, Macedonia and Bulgaria; so much so as to be hardly recognisable as belonging to the same culture.

Indeed, /

Indeed, in the early history of Hungarian archaeology, the Koros material was regarded by their greatest specialists as the latest, most degenerate stage in the evolution of the middle Neolithic Tisza culture (Banner, 1932, 1-48).

The material was systematically classified and defined first in Hungary by I.B. Kutzian, as belonging to the Körös culture (Kutzian, 1947, 4-13). Since then, however, similar poor versions of the southern Starčevo/Karanovo I culture have been found north of the Danube in Rumania and the Ukraine S.S.R., representing the earliest agriculturalists in each area concerned, and known in each case as the Criş culture (Rumanian for Körös), although not necessarily being centred on the Criş river basin.

It seems from the evidence of all the Criş/Körös sites, that the Hungarian Körös culture was not the centre of diffusion of a strong innovating culture, representing an expansion of the Starčevo culture northwards from the Danube, but that, if the culture did have a centre of diffusion, it was more likely to be in Rumania (Comşa, 1959c, 180). It is much more likely, however, in view of the static quality of the material, that the Körös/Criş culture, or group of cultures, represents a slow infiltration of food-producing colonists, possibly on a broad front across the Danube into the transitional environmental region.

Known, or unknown to them, the natural conditions of this region, with wetter summers and cooler winters, tended to discourage such a high agricultural production rate as the true Mediterranean region further south; thus, it was inevitable that, without adaptation to these new conditions, the colonists would slip into a lower standard of living, perhaps barely above the subsistence level.

Although/

Although the Criş/Körös communities did adapt to a certain extent, in that fishing played an important part in the economy, and settlement was concentrated on the bottoms of river valleys and lakesides, this could be better interpreted as degeneration because of difficult natural conditions, rather than deliberate adaptation in order to overcome the difficulties; it is significant, at this point, that, although it can be proved that the Körös/Criş culture lasted a very long time (e.g. unpublished site of Balomir in Transilvania with rusticated Criş sherds found in association with a square-sectioned copper awl), little or no internal evolution can be seen in Criş/Körös pottery, or in any other aspects of the material culture, even on sites where stratigraphical evidence has been found, (see below, Marošlele and Leţ). As with Starčevo/Körös in north Yugoslavia, on these sites chronological differences are evident only in the presence or absence of pottery foreign to the Körös/Criş culture.

Perhaps the most obvious feature of the process of degeneration and provincialisation of the Starčevo/Karanovo I painted pottery cultures as seen in the settlements of the Körös/Criş culture, is the almost total absence of painted pottery, and fine burnished pottery in general, and a predominance of the coarse kitchen ware with rusticated forms of decoration:

2) South-east Hungary: in the corner of Hungary east of the Tisza river and south of the Körös river, at least 50 sites belonging to the Körös culture have been discovered; of these, only four have produced painted pottery; the patterns are painted in black on two sites, and in white on one site and black and white on one site; the pots on which they are painted are especially hemispherical bowls on a pedestal foot, or, sometimes, the typical Koros globular pot with a ring base, made of fine ware, /



ware, with a red slip and burnished.

The area where Hódmezővásárhely now stands was a great centre of settlement of the Körös culture; among the 12 sites in the area, there are two which have painted pottery (Kutzian, 1947, 6.):

Kopancs (Zsoldos tanya) has produced a hemispherical pot with black thick and thin parallel vertical lines painted on a red slip, and fragments of another with white parallel vertical lines. (Banner, 1932, 10-13).

Kotacpart (Vata tanya) has one sherd with white parallel lines painted on a red-slipped ground. (Banner, 1933, 54-84; 1935, 97-125).

On the drier humps which rise above the marshy alluvial plain of the confluence of the Tisza and Maros rivers near Szeged, there is another important series of Körös settlements, two of which have produced painted pottery:

A very large pit has recently been excavated by Dr. Otto Trogmayer (1964/65) and is, as yet, unpublished at Röszke (Ludvár); apart from a very interesting fragment of a house-model, and several complete or fragmentary figurines, the material from the pit includes mostly rusticated coarse sherds and one or two sherds of fine red-slipped burnished ware decorated with black-painted patterns.

Maroslele (Pana) was excavated in 1963 in the same region, and has produced some very interesting stratigraphical evidence (Trogmayer, 1964, 81-84). Pit 4 of the settlement has been divided into two layers by an intermediary compact sterile layer of snail shells which probably represents an inundation of the settlement (Trogmayer, 1964, 70). The material/

material of the lower layer, according to Trogmayer, shows affinities with the Proto-Sesklo culture of Thessaly (Milojčić, 1959, 9), since it contains no painted pottery, although it has plain fine red-slipped burnished ware, and even one sherd with a white burnished slip; basically, however, the pottery of the lower layer is coarse rusticated pottery so typical of the Körös culture; the pottery of the upper layer also does not include painted ware, and red-slipped pottery forms a much smaller percentage; the majority of sherds consist of coarse ware tempered with organic material and decorated with nail and reed impressions and incised "net" patterns, just as in the lower layer.

Pit 3 at Maroslele (Pana) is considered, by Trogmayer, much younger than either layer of Pit 4, since, although the basic Körös rusticated pottery appears the same in each pit (with more plastic barbotine decoration in 3), Vinča culture elements from the south in the form of sharp-angled bi-conical pots and early linear pottery elements from the north appear among the pottery of Pit 3; therefore Pit 3 must belong to the end of the Starčevo-Körös sequence.

One or two painted sherds, black rectilinear patterns on a red-slipped ground, were found in the culture layer above the pits, in association with typical Körös culture rusticated coarse ware; this layer, found over much of the area of the settlement is thought to represent the main, painted-pottery phase of the Starčevo-Karanovo-Körös culture.

It may be recalled here with D. Garašanin was of the opinion that the earliest neolithic sites of North Yugoslavia and south-east Hungary, represented by the Starčevo-Körös and Körös cultures, were in existence only/

only in the very last phase of development of the Starčevo culture (III), contemporary with the beginning of the Vinča culture (Garašanin D., 1954, 137-138). This stage may be seen clearly in Pit 3 at Maroslele. Equally clear, however, is the fact that this Pit 3 is cut into an earlier culture layer which contained painted sherds typical of the Starčevo culture. It is possible that there was an even earlier phase of settlement at Maroslele represented by Pit 4. Thus all the evidence from the site would indicate that the Körös colonisation took place almost at the same time as the beginning of the Starčevo culture further south, and that it lasted unchanged, except for a few outside elements, for a very long time.

Carbon-14 dates from the Hungarian Koros culture sites would tend to support this evidence:

Gyálaret, nr. Maroslele, and very similar; a pit has been excavated by Trogmayer with two layers separated by a sterile shell layer; the upper layer contained typical Körös coarse pottery with sherds with Vinča and early linear pottery elements; the lower layer contained the same Körös sherds, but without any foreign elements, although there was a sherd of fine thin ware with a white burnished slip, as at Maroslele. This lower layer has a C-14 date:

5140 $\pm$ 100 b.c. Bln 75 (Quitta and Köhl, 1964, 315)

The two other dates are later, one coming from a site with painted pottery:

Kotacpart (Váta tanya) 4500 $\pm$ 100 b.c. Bln 115

Katalszek, co. Bekes 4420 $\pm$ 100 b.c. Bln 86

(Quitta and Köhl, 1964, 314-5)

3) South-west Rumania, especially the area centred on Timișoara and Arad, known as the Rumanian Banat, shows a continuation of the Starčevo/Körös culture of the Yugoslav Banat. There are six sites in this area, discovered by Milleker and various Hungarians before World War II when the Rumanian Banat belonged to Hungary, as did the Yugoslav Banat. Only one site has produced painted pottery:

Beșenova Veche (Hungarian: Óbessenyő), nr. Sîrmicolaul Mare, Timișoara county. As in the Yugoslav Banat, the rusticated kitchen pottery which predominates is not so coarsely made as in the Körös sites; there is also a higher proportion of the buff burnished undecorated ware; at least two examples of painted ware were found, fine red-slipped ware with black-painted parallel vertical lines as decoration; the characteristic shape for both these latter groups of pottery was the hemispherical bowl on cylindrical pedestal base. (Nagy, 1911, 147-164; Milleker, 1938, 103; Garašanin D., 1954, 58; Comșa, 1959c, 173).

North of the Banat, in the southern part of the region round Oradea, known as Crișana, since it consists of the Criș river basin, an eastern extension of the Hungarian Körös culture may be seen on two or three sites, none of which have produced any painted pottery, except for a find from Șantul Mare (Pecica) near Arad; this is a thick sherd of red/buff burnished ware with parallel black stripes painted on it; it was published by Roska as coming from the lowest, or 'Eneolithic' layer of the large Bronze Age site (Roska, 1942, 224; 1943, no. 45). Painted pottery, least of/



of all of this type, is never associated with Bodrogkeresztur culture material; nor does it resemble any of the later painted pottery of the Great Hungarian Plain, which will be dealt with in subsequent chapters; thus this sherd may be treated speculatively as belonging to a Körös site on the river Maros in the vicinity of Pecica site.

4) South Rumania, comprising the regions of Oltenia (west of the Olt river) and Muntenia (east of the Olt), has a number of settlements along the northern bank of the Danube, and on the lower terraces of the rivers flowing from the Carpathians to the Danube, such as the Jiu, Olt, Ialomița and Buzua. Recent research in central and north Muntenia has brought to light an important series of settlements which indicate continuous Körös/Criș settlement from the Danube area to north-east Rumania (Moldavia) (Teodorescu, 1963, 265-267; Comșa, 1962, 55).

The Criș settlements of Oltenia seem to be an extension of the Starcevo culture of North-east Serbia (Garašanin D., 1954, 36-38) and the Karanovo I/II culture of north-west Bulgaria (Nikolov, 1962, 65) with the same modifications, caused by greater distance from the centre of stimulus and changing natural conditions, as may be seen in the transitional Starcevo-Körös culture of north Yugoslavia and the Rumanian Banat: i.e. great decrease in the proportion of painted pottery, and a predominance of coarser kitchen ware decorated by rustication or undecorated with a smooth surface; an increasing importance of fishing in the economy and a predominance of flat, short-lived settlements indicating semi-shifting agriculture. (Comșa, 1959c, 173-184; Berciu, 1960a, pp 261; 1961a, 21-35).

15 sites of this type have been discovered in Oltenia, but only one has produced painted pottery:

Verbița, raion Călăfat, west of Craiova; the site was excavated in 1956-57, when two layers were distinguished: the upper layer (II) has no painted pottery, and very little fine pottery, most of the material being coarse rusticated ware made especially into bomb-shaped pots and often decorated by plastic barbotine decoration which Berciu regards as a later feature of the Criș culture (Berciu, 1961a, 30); this supposition may be supported by the stratigraphical evidence from Maroslele (see above).

The lower layer at Verbița (layer I) has a large amount of similar coarse rusticated ware, without the plastic barbotine decoration a much greater percentage of fine ware, sometimes plain buff polished, sometimes with a red burnished slip; two of the red-slipped sherds have been decorated with white-painted rectilinear patterns; Berciu regards this layer as representing the main painted-pottery phase of the Starcevo/Karanovo I culture. (Berciu, 1960b, 85-87; 1961a, 29-32).

In Muntenia, 19 sites belonging to the 'Criș' culture have been discovered, although they hardly deserve to bear the same cultural designation as those of the earliest neolithic culture of the Criș basin. Painted decoration is entirely absent, and most of the pottery is thick but well-made undecorated buff ware, although decoration by regular rows of finger- and nail-impressions also appears; another type of decoration which occurs is fine shallow channeling of a burnished surface (Theodorescu, 1963, 251-274), which is very typical of pottery found in layer II at Karanovo (after Georgiev 1961, and Dudești and the contemporary early Vinča-Tordoș ware (Comșa, 1962, 58-59; Milošević, 1948a, ). Thus it would/

would seem that the 'Criş' material of Muntenia represents a later expansion of agriculturalists from Oltenia or from north-central Bulgaria, since, as was mentioned above, the region south of Muntenia, that is North-east Bulgaria was very sparsely settled in this period.

In the Dobrogea, no sites with material resembling the 'Criş' culture of Muntenia have yet been discovered. This fact has been explained by Berciu with the Hamangia culture, which, he says, was already in existence contemporary with the Criş culture in Rumania and the Karanovo I culture in south Bulgaria. (Berciu, 1961a, 76-77; 1955, 13-14).

There is thought to be stratigraphical evidence for the local selection of sheep/goats with a view to domestication in an aceramic layer at the cave of La Adam in the Dobrogea, with Hamangia pottery developing in the layers above (Radulesco, 1962, 282-320). Berciu would interpret this as an aceramic neolithic out of which, with stimuli from the east Mediterranean, developed the Hamangia culture. There is, in fact, no stratigraphical evidence for the internal development of Hamangia pottery, but, on a typological basis, Berciu has seen the certain amount of cardial-impressed ware as representing a proto-Hamangia phase, immediately after the aceramic neolithic phase, since cardial-impressed ware is found in the Pre-Sesklo layers at Argissa in Thessaly. (Berciu, 1961a, 77; communication at Edinburgh University, 1.3.65). He would further see this as Pre-Starčevo-Karanovo I - Criş, since 'cardial-impressed ware represents the earliest neolithic culture wherever it occurs'.

The conception of pre-Criş pottery-using communities in this region is thought/

thought to be supported by evidence from the Ukraine, where, as will be seen below, Danilenko has caused confusion by stating that the 3rd phase of the Southern Bug culture, known as Petčora, has analogies and connections with the Criș culture of Moldavia (Danilenko, 1957, ; 1960 ; Passek 1962, 129; this is, in fact, very true, but the Petcora group represents the westernmost group of the Southern Bug culture in its first, not its third phase (Sulimirski, 1966, 33-7). In view of the lack of conclusive evidence for a phase of the Hamangia culture before or contemporary with Starcevo-Karanovo I-Criș, it would perhaps be more satisfactory to discuss the Hamangia culture along with neighbouring cultures with which it has been proved to be contemporary, i.e. Boian (Comșa, 1962, 64; Berciu, 1955, 29-46), until there is definite stratigraphical proof that it existed earlier.

5. North-East Rumania (Moldavia); there are 27 sites belonging to the Moldavian version of the 'Criș' culture, distributed on the lower terraces of the valleys of the Seret, Prut and Jijia (Petrescu-Dîmbovița, 1959, ). It is very difficult to tell where the pottery comes from and where it lies in the pottery sequence of the Criș culture (Comșa, 1959c, 181). There is a continuous series of 'Criș' settlements from Muntenia to Moldavia, whereas the Carpathians lie between those of Transilvania in north-west Rumania and Moldavia.

However, painted pottery occurs on four of the Moldavian sites, although it is completely absent from Muntenia. The Moldavian Criș pottery is similar to that of south Rumania, in that the predominant group is the unslipped coarse ware, but, like the Körös pottery of south-east Hungary, it is softer and rougher and tempered with stones and a large percentage of organic material; /



material; decoration was often by regular rows of nail- and finger-impressions, and by running the fingers across the pot when it was wet.

Painted decoration occurs on pottery with less organic admixture, with a red or orange or slightly buff slip; the rectilinear patterns were painted in black or white, both variations occurring on all four sites.

From the stratigraphical evidence at Perieni, it is obvious that the Moldavian 'Criș' culture preceded the late phase of the linear pottery culture which appears above the Criș layer without any cultural break in between; however, from the small excavation, it is not yet possible to say if there was any contact between the two groups; nor is it possible to say when the Moldavian Criș culture began, or how long it lasted. However, whether it came from Muntenia, or from Oltenia via the Olt river and Transilvania, this north-west corner of Rumania is likely to have been one of the last regions reached by the Starčevo/Karanovo I-Criș colonists in their expansion from the south.

Perieni, raion Bîrlad, reg. Iași in south Moldavia, was excavated in 1955; two or three painted sherds, black or white on red/buff came from a pit, with sherds of coarse rusticated ware (Petrescu-Dîmbovița, 1957, 69-75; 1959, 62-66). The shape of the painted pottery includes hemispherical bowls standing on low pedestal bases, which are cylindrical or of a shape which in plan resembles a four-leaf clover shape, and which is found on several sites in Moldavia, including Valea Lupului; it also occurs in the upper Criș at Verbița in Oltenia (Berciu, 1961a, 30; 1952, 76).

Pogorăști, raion Vlădeni, reg. Iași, near the confluence of the Prut and Jijia, was excavated by I. Ionitsa of Iași Museum, who found evidence for/

for a settlement; pits 1 and 2 produced white on red and black on red painted sherds, one of each kind in each pit, (Petrescu-Dîmbovița, 1959, 57 no. 21).

Valea Lupului, reg. Iași, on R. Jijia has one or two sherds of red-slipped ware with black or white-painted patterns in association with Criș rusticated ware. (Dinu, 1959, 247; Comșa, 1959c, 173-184; Petrescu-Dîmbovița, 1959, 57 no. 27).

Glăvănești Vechi, r. Vlădeni, reg. Iași, on the R. Jijia; near the large late linear pottery site, there was a smaller settlements from the Criș culture, but there is no overlap of the two to be seen in the section. There are one or two sherds of white- or black-painted rectilinear patterns painted on a red/orange slip (Nestor, 1950a, 28-32; 1950b, 208-219; Petrescu-Dîmbovița, 1959, 57 no. 12;). Glăvănești Vechi has produced some very interesting evidence for the predominance of domesticated cattle over sheep in the Moldavian Criș economy, which will be discussed in a later chapter. (Comșa, 1959c, 177).

6) Ukraine and Moldavian S.S.R. East of the Criș settlements on the Prut river of Moldavia there is a series of sites on the lowest terraces of the Dniester and especially the Southern Bug river; these have recently been classified as the Southern Bug culture or Bug-Dniester culture (Danilenko, 1960, ; Passek, 1962, 28-30).

The culture is distinguished by having an economy based on fishing and some hunting without agricultural techniques until its later phases; however, the population was familiar with the techniques of pottery manufacture.

Many/

Many of the settlement sites are stratified, and on a basis of this, there may be distinguished an Early, Middle and Late phase, with material from the Tripolye culture above; thus, the whole evolution of the S. Bug culture took place in the Pre-Tripolye period.

As will be seen later, the Middle phase, known as Samtšin, must be contemporary with the linear pottery culture in the Ukraine, since sherds with 'notenkopf' decoration have been found in the Samtšin layer at Basilov Ostrov etc.

The Early phase of the S. Bug culture was thought by Danilenko, and others who followed him, to consist of three consecutive sub-phases:

I	Skibinitz	
II	Sokoletz	
III	Petčora	(Danilenko, 1960 ; 1962, 23-27; Passek, 1962, ; Gimbutas, 1966, 465).

Analogies and connections with the Criș culture of Moldavia occurred especially in the Petčora, or 3rd phase. Recently, however, Sulimirski has pointed out, after further examination of the stratigraphical reports of the S. Bug sites, that no two Early Southern Bug phases ever appear on the same site, but only on separate sites; thus, the basal or post-Mesolithic layer is represented by material of Skibinitz e.g. Basilov Ostrov, Sokoletz e.g. Sokoletz II, or Petčora type e.g. Sokoletz VI, Zankivtsy, Szymanivske, and these Early S. Bug 'phases' are, in fact, three local facies of the Early S. Bug culture. (Sulimirski, Prehistoric Russia, in press).

As mentioned above, the basal layer of many of the sites, e.g. Zankivtsy represents a local Mesolithic culture, called 'Aceramic Neolithic' by Danilenko, with an economy based on hunting and fishing and with a local microlithic flint industry.

It/

It is obvious that the Southern Bug 'Neolithic' population is descended directly from this local Mesolithic population, for the only feature which distinguishes it from the preceding one is its manufacture of pottery.

It is not certain yet from where the S. Bug population obtained their knowledge of pottery-making. However, in the westernmost, or Petřora group, there appears a type of pottery which shows great affinities to the Moldavian Criș ware: the pottery is fine, grey ware with a polished surface, mostly undecorated; the shapes include a very characteristic globular bowl on a low pedestal foot, which is often extremely narrow; a biconical bowl also occurs; both these forms are typical of the Moldavian Criș ware (Petrescu-Dîmbovița, 1959, 66).

Quite distinct from this pottery, and more typical of the eastern Skibinitz and Sokoletz groups, is the true Southern Bug culture pottery, which is connected with various series of similar pottery all over the forest/steppe and forest zones of the U.S.S.R. (Gimbutas, 1956; Briussov, 1952; Sulimirski, Prehistoric Russia Chapter III 61-92, in press); this is soft red/brown ware with a shiny surface and pointed bases and decorated all over by rows of tiny incisions arranged in zig-zag patterns etc. (Danilenko, 1960, ; Passek, 1962, 129; Gimbutas, 1966, 465).

This typical S. Bug culture pottery may represent a local development of a pottery style after the initial stimulus from the Moldavian Criș culture, and spreading from the Bug river eastwards and northwards. At any rate, the Southern Bug culture must be regarded as one of the classic examples of pure acculturation by a Mesolithic population to the benefits and techniques/



techniques provided by a neighbouring Neolithic population.

7) North-West and Central Rumania (Transilvania), between the Mures (Hungarian: Maros) and Criş rivers and west of the Carpathian mountains, 32 early neolithic settlement sites have been discovered, most of them only very recently (Vlassa, the Criş culture in Transilvania, in press); they are all classified as belonging to the Criş culture of Transilvania, and seem to be connected more with the transitional Starčevo/Criş of the Rumanian Banat and Oltenia than with the Körös culture of Hungary, since the pottery, which is predominately of the coarse kitchen-ware type, is comparatively well made with organic admixture and a smooth buff surface, and decorated by regular rows of finger- and nail-impressions; there is very little true rustication of the surface or plastic barbotine application as in Körös culture (Kutzian, 1947, 4-7).

One method of access to Transilvania from the south must have been up the Olt river, for just below the source of this river there is an important series of settlements showing features in connection with the south such as painted pottery and centred on the interesting site of Leţ. Another route would have been from the Banat, up the Mureş, for all along this river there are Criş settlements.

It is certain that in Transilvania, the Criş culture was very long-lasting, and existed in many places, such as Noşlac nr. Cluj, up to the time of copper-using cultures such as Petreşti; and, possibly in one or two sites e.g. Iernut nr. Luduş and Balomir, nr. La Tărtăria on the Mureş R. the Criş culture it existed at the same time as the Petreşti culture, since a Petreşti copper awl has been found at the latter site and copper slag/

slag at the former site with Criş-type coarse sherds.

At one or two Criş sites, late linear pottery sherds have been found with Criş pottery and these will be discussed in a later chapter, e.g. Rupea, reg. Braşov, in S.E. Transilvania (Dumitrescu V.; 1958b, 401-5) and Sf. Gheorghe (Bedehaza) also nr. Braşov (Horedy, 1956, 16-18).

Three of the Transilvanian Criş sites have produced painted pottery: Bidescutul Mare nr. Iernut, reg. Mureş, in north Transilvania, has produced a sherd of red-slipped ware with black-painted patterns (Unpublished in Cluj Museum).

Gura Baciului (Băztărău), nr. Cluj, in central Transilvania is also unpublished, except for the material from a Criş crouched burial nearby (Vlassa and Palko, 1965, 13-17). The settlement has been excavated by Vlassa in 1960, and the material, including one or two sherds of red-slipped ware, with white-painted recilinear patterns, is in Cluj Museum; most of the material is thick soft ware, with some organic admixture, and a smooth surface, decorated with reed-impressions, nail-impressions etc.

Leţ (Varhégy), raion Tîrgu Săciuesc, reg. Braşov, south-east Transilvania, is an important stratified site on a terrace of the upper Olt river; it was excavated in 1949 by Szekely, but it was not until the excavations of Nestor and Zaharia in 1955 that the stratigraphy became clear (Nestor, 1957, 59; Zaharia, 1962, 5-51). The Criş culture layer had been cut into by a large pit with material belonging to the Boian I/Precucuteni I culture, and above both was a thick layer representing the Ariuşd culture settlement.

In/

In the Criș layer itself, three sub-layers may be distinguished (Zaharia, 1962, 14) in which it is possible to see a certain amount of internal development in the forms and decoration of the fine plain and painted pottery. Leț is unique so far among all the local groups of the Körös/ Criș culture in having at least 69 sherds with painted decoration; in every case the painting is on fine ware with organic admixture, and covered with a red burnished slip; the patterns are all basically redilinear and executed in white, black/brown or black and white together. The shape of the fine pots, including the painted examples, was nearly always the hemispherical/biconical bowl on a cylindrical pedestal foot, which tends to become lower and grade towards a ring base in the later stages; in phases I and II the cruciform- or clover-leaf pedestal base occurs, as was seen in Valea Lupului and Verbița II (Berciu, 1961a, 30).

In the Criș I layer at Leț, painted pottery is comparatively rare; the layer represents the base of a rectilinear house: there were five sherds: two of which were white on red  
 1 black on red  
 1 black bordered by white on red. (Zaharia, 1962, 36)

In the Criș II layer, there are also very few painted sherds: at least eight come from the layer;

4 white on red

3 black on red

1 white bordered by black on red.

On a basis of typology Zaharia has classed 16 sherds coming from Criș III as Criș II:

5 white on red

11 black (or, at least dark) on red (Zaharia, 1962, 38)

In/

13 In the final, Criș III, layer, black-on-red and white-on-red sherds occur in equal proportions; there is a new element in the patterns, however, in the form of meanders, painted especially in white, and occurring on different shaped pots (Zaharia, 1962, 38).

It should, perhaps, be remarked here that between Criș I and Criș II there is at least a 20cm. thick sterile layer which would seem to indicate a cultural break between the two phases, and may indicate also that the hypothesis Leț I = Starčevo end I, Leț = II Starčevo II, and Leț III = Starčevo III is not necessarily correct. (Zaharia, 1962, 49).

C) Painted Pottery from the sites of the Oldest Linear Pottery Culture of the Great Hungarian Plain

North of the Körös river, and east of the Tisza, in the northern part of the Great Hungarian Plain, or Alföldi, (which includes the western edge of Rumania), material of the Körös culture does not appear. However, the same innovating agricultural population represented by the Körös/Criș/Starčevo etc. cultures of the south did not expand north of the Körös river; but at this latitude, the environment was truly central European and, at this distance from the centre of activity and development in Serbia, Macedonia and Bulgaria, isolation from the traditions of the parent-culture must have been very great. Thus, under these conditions, the culture representing the earliest agriculturalists was transformed to such an extent as to be superficially unrecognisable as an offshoot of the Starčevo/Karanovo I group.

In subsequent chapters it will be shown exactly how the traditions of the south were transformed. At this stage, however, we are concerned with proving that the earliest neolithic cultures of the Alföldi, and neighbouring areas north and west of it do, in fact, represent colonists from the south, genetically/



genetically derived from the Starčevo/Karanovo I group.

The earlier neolithic cultures of Central Europe have been classified together under the names 'Bandkeramik', Danubian I, 'Linearbandkeramik', 'Linear pottery' etc. cultures, to describe the main feature which distinguishes these from the painted-pottery cultures of the south: that is, the predominant use of incised decoration on all pottery, except perhaps kitchen ware. Since the main specialists working in this field now refer specifically to the central European group, excluding the southern Vinča group, as the Linearbandkeramik, Lineární keramik, Linear pottery cultures, they will be referred to consistently as such throughout this study.

The Linear pottery group will be discussed in detail in subsequent chapters. It is sufficient here to point out that in its earliest phase a series of sites with homogenous material occurs in East Hungary (Alföldi), North-east Hungary-South-east Slovakia, west Hungary-South-west Slovakia-south Moravia-North-east Austria, and Bohemia-south-east Germany (Saxony). (Quitta, 1960, 1-11; 153-188; 1962, ;). The material includes pottery with a very similar colouring, texture and form to the pottery of the Körös culture: orange/buff ware, soft, with a high content of organic admixture; the surface was either roughened and rusticated with finger- and nail-impressions etc. or smoothed and decorated by thick incised lines in simply curvilinear and rectilinear patterns.

On some early linear pottery sites of the Alföldi and E. Slovakia-N.E. Hungary, in association with the soft orange incised ware, there occurs a quite foreign type of pottery related to or imported from the painted-pottery cultures of the south: this is fine, hard ware without organic admixture, covered with a red-slip, decorated with black-painted curvilinear and rectilinear patterns (including/

including spirals, triangles, zig-zags etc.) and then burnished.

S.E. Slovakia-N.E. Hungary, the "Eastern Group" of the Linear Pottery cultures, is especially important since painted ware of this type has been excavated in a fully-documented stratigraphical context. On a basis of the stratigraphy of the recently excavated cave-sites of Domica, Ardovo, and Čertova Diera, Lichardus has distinguished a complicated cultural sequence for the Eastern Linear Pottery/Bükk culture, which will be discussed more fully later. (Lichardus, 1962, 47-56; 1964, 858-879). In this section we need be concerned only with the first stage of this. (Lichardus, 1964, 860-861). Black on red painted ware has been found at Domica and Ardovo in the earliest settlement layer.

Domica, nr. Plešivec, reg. Šafarikovo, in the Slovakian Karst, in S.E. Slovakia, was excavated in 1932/33 by Böhm (Böhm, 1933) and in 1963 by Lichardus. (Monograph on Domica is already in press). The lowest neolithic settlement layer in the cave contained thick sherds with simple rectilinear incised patterns and at least 15 fine hard red-slipped burnished sherds with black-painted spirals, curves, parallel lines, triangles, zig-zags on the interior and exterior surfaces; the shape of the pots included especially bowl-conical or hemispherical bowls on low cylindrical/flaring pedestal bases. (Domica, 1964, 862-68).

At Domica, there are also one or two sherds with a red-slipped surface which is rippled or channelled very finely in a similar fashion to those of Karanovo II (Georgiev, 1961, 63) or Vinča-Tordoš A and Bi (Milojčić, 1949, 72) and then painted over in black. Thus, on typological grounds, Lichardus regards this to be slightly later than the simple black on red painted ware. (Lichardus, 1964, 868).

Sherds with a red/buff slip occur with decoration combining incised lines and painted lines, and he regards these as the latest development of the painted pottery associated with the Earliest Linear Pottery in S.E. Slovakia-N.E. Hungary.

Aggtelek (Baradla Cave) is a continuation of the Domica cave, but across the border, in North-east Hungary. It was excavated in the last century, so that it is difficult to distinguish any stratification from the excavation report (Nyáry, 1881). However, from a typological analysis of the sherds, it is possible to see that it was also settled during the earliest phase of the linear pottery culture, for at least three painted sherds were excavated, one combining incised decoration (Tompá, 1929, 13).

Ardovo, 6 km. from Domica in S.E. Slovakia, is another cave-site excavated by Lichardus in 1962; the stratified section showed that the cave had been settled continuously throughout the evolution of the Bükk culture (Lichardus, 1964, 846). In the lowest layer, painted pottery occurs with incised ware of the earlier Linear Pottery type and of the later type with the beginnings of the Bükk culture; it has been thought that perhaps the lowest layer at Ardovo was originally two layers which have since become disturbed, and that the five or six red-slipped sherds with black-painted thick curvilinear and rectilinear stripes belong to an earlier layer, along with the organic tempered sherds with simple incised designs (Lichardus in discussion in Nitra, April 1964). For it has been shown on sites such as Barca I and III in S.E. Slovakia that the early incised linear pottery does not occur in stratigraphical association with incised pottery of the earlier Bükk type (Pre-Classical Bükk) (Hajek, 1957, 3-7; Lichardus, 1964, 848-852); likewise, at Domica the red-slipped ware with black-painted patterns/

patterns is associated with incised pottery of the Early Linear pottery type but never with that of the Pre-Classical Bükki type (Lichardus, 1964, 862).

From the stratigraphical position and the shape, colour and texture and decoration of the black-on-red painted pottery of Domica, Aggtelek and Ardovo, Lichardus considers this to represent a connection between the earliest phase of the Linear Pottery culture of S.E. Slovakia and the Starčevo culture of the south (Lichardus, 1964, 860-868). Whether this connection was in the form of direct importation, or local manufacture on some sites which were not so isolated as others, is difficult to tell; the painted ware is certainly quite different from that decorated with incised lines which becomes the dominant ware of the Linear Pottery group; its closest analogies are in the upper two Criş layers at Leţ (Zaharia, 1962, 5-52), and in the black-on-red painted ware from the Starčevo/Körös sites of North Yugoslavia and the Rumanian Banat (see above). The painted ware of the latter, consisting mostly of thick black lines in curvilinear and rectilinear patterns is much more likely, and logically, to have acted as the prototype, or even the source, for the S.E. Slovakian-N.E. Hungarian examples, than that of the Criş and Karanovo I sites further east, where there is often a predominance of white-painted patterns.

There are one or two more sites which possibly serve as examples of the presence of this early Starčevo/Körös painted ware in East and N.E. Hungary in association with early linear pottery:

Kőlyuk, north of Miskolc, in Borsod county, north-east Hungary, is an unpublished cave-site which has produced material belonging mostly to the Pre-Classical and Classical Bükki Phases. However there was also one sherd of/



of red/buff slipped ware decorated with thick parallel black-painted stripes in a curvilinear (possibly spiral) pattern (Material in Miskolc Museum). The material of all phases was mixed together so that it is impossible to tell whether any of the incised ware of the second stage of the Linear Pottery found in the cave is to be associated with this sherd or not. (Korek, 1957, 14-24).

Tiszalok (Berettskydülő), near Tiszavasvari, west of Nyíregyháza in the northern part of the Alföld; the site consisting of three pits was excavated in 1963-64, but is unpublished. Two sherds of red-slipped ware with black-painted lines in rectilinear patterns were found in association with thick soft sherd decorated with wide incised lines in simple patterns in the style of the earlier linear pottery culture (material in Tiszavasvari and Nyíregyháza Museums).

Thus of approximately 35 sites of the earlier Linear Pottery culture on the Alföld only one site has pottery which is definitely of this early Starčevo-Körös type; and of a similar number of sites in S.E. Slovakia-N.E. Hungary four have produced black-on-red "Starčevo-Körös" painted ware. This is a similar ratio of sites with painted pottery to those with no painted pottery as may be seen in the Koros culture of Hungary and the Criș cultures in Rumania.

However, unlike in Rumania, and south-east Hungary where the tradition of making pottery and painting it before baking dies out, (in spite of Professor Berciu's hypothesis (1961a, 23-24)), in E. and N.E. Hungary, the tradition of making painted pottery did not die out, but, in this north-eastern corner of the Alföld it developed and grew in importance becoming a component part, and eventually a dominant part, of the material culture of the Linear/

Linear Pottery cultures of this region.

Other Painted Pottery from Early Linear Pottery site of the Alföld

Besides the painted pottery with obvious analogies in the Starčevo-Körös group, there are a number of sites which have produced a more individual type of painted pottery. It is also a very fine, thin hard ware, without any organic admixture, and covered with a red slip, painted with black stripes and then burnished. The difference from the group of painted pottery discussed above is its greater frequency of occurrence, its different repertoire of patterns, and perhaps an association with slightly later incised linear pottery.

Kalicz (in discussion at Budapest, April 1965) regards it as slightly later than the initial stage of the Linear Pottery culture of the Great Hungarian Plain at a phase which he calls Ib/II. Makkay (in discussion at Dunaujváros, 5.65) refers to this group of painted pottery as the Esztár group, after one of the sites on the Alföld.

The patterns consist of bands of vertical, and sometimes horizontal and diagonal, thick and thin parallel stripes. This pattern also has analogies in the Starčevo-Körös painted ware, such as at Vinča, Zemun, Obrež, Szarvas, and Starčevo, and further south in Serbia for instance at Bubanj (Orssich-Slavetich, 1941, 20), and in the Körös culture at Maroslele and Kotacpart (Váta tanya). A special characteristic of the painted ware of the northern Alföldi is to make some of the thin lines wavy instead of straight, a feature which is seen very commonly in the incised decoration of pots which accompany this painted ware.

Many of the sites of the Early Linear Pottery culture in East and North-east Hungary have been excavated without regard to stratigraphical context, and/

5:2,8  
11,  
6:4,5  
7:5  
4:10  
8:12,2

and the pottery recorded without reference to any context, horizontal or vertical; thus it has been difficult to prove, without resort to typological methods, that certain types of incised and painted wares are later than others. However, from analogies with the material from stratified recently-excavated N.E. Hungarian/S.E. Slovakian cave sites it is possible to say that the pottery with simple incised decoration which appears in association with black-on-red painted pottery of the Esztár type described above, is very similar in shape, texture, and appearance to that which appears in the lowest layer at Domica and Ardovo; some of the early Alföldi material is equally similar to the incised ware from Barca III, which is not associated with any painted pottery and which is regarded as slightly later than Domica I (Lichardus, 1964, 848-858; Hajek, 1957, 3-9).

It is for this reason, perhaps, that Kalicz regards the early painted ware of the Alföldi and the incised ware associated with it as representing the second stage of the Linear Pottery Culture in East Hungary, especially since Lichardus does not consider the earliest linear pottery of E. Slovakia to be as early as the material of the first stage of the Linear Pottery of the Alföldi (Alföldi Linear Pottery Ia). (Lichardus, 1964, 868). Whether this Alföldi Linear Pottery Ia comprises the early linear pottery sites without painted decoration, or whether the Ia stage is distinguished purely on a typological basis, is never made clear; nor are the distinguishing features of phase Ia, Ib, II of the early linear pottery cultures in East Hungary and N.E. Hungary-S.E. Slovakia ever described, except by what many of the specialists working with this controversial material refer to as the "feel" of the pottery.

Thus it is difficult to prove that the painted pottery of the Esztár type/

In East Hungary, early Linear Pottery incised ware occurs on at least 50 sites, distributed in an area north of the Körös river, east of the Tisza, south of the N. Hungarian limestone hills and west of Transylvania in Rumania. Red-slipped ware with black-painted patterns of the Esztár type occur on at least 12 of these sites.

A) E. Hungary: Debrecen (Szabolcs utca), Hajdú-Bihar county; the site, in a sand-pit was excavated in 1936 by Sőregi. Material included thick-walled pottery decorated by finger- and nail-impressions; and by simple incised patterns. There was also one sherd of finer ware, covered in a red slip and painted with wide black stripes. The material is in Debrecen Museum. (Korek, 1960, 34).

Debrecen (Tócsópart), Hajdú-Bihar county; the site, including two 'hearths' was excavated in 1933 by Söregi (Söregi, 1933, 32-33). The painted pottery included one or two sherds similar to those of the lowest layer at Domica. Most of the sherds, however, are decorated by rectilinear black- /



21:1,3,4 black-painted patterns of the Esztár type. However, mixed among these,  
 22:1-3 presumably by the excavator are sherds with black painted curvilinear  
 21:2 designs on a buff ground which will be proved in a subsequent chapter to be  
 22:4 later than those of the Esztár type. (Korek, 1960, 34). Material in  
 Debrecen.

Esztár, nr. Debrecen, Hajdú-Bihar county. The material from this  
 23:2,3 site was collected by J. Makkay in 1955 and includes a few sherds of the  
 fine red-slipped ware with black-painted rectilinear patterns. Material  
 in Debrecen and Dunaujváros Museums. (Kutzian, 1963, 410).

Tiszadob (Ókenéz), west of Nyíregyháza, on the river Tisza; the  
 site consisting of pits was excavated by Csallany in 1960, but is unpublished.  
 The material, including one sherd of red slipped ware with black-painted  
 decoration, and a large number of incised sherds very similar to those from  
 Barca III, is in Nyíregyháza Museum.

Tiszavasvari (Keresztfal), 30 km. west of Nyíregyháza, on the Tisza  
 river was excavated 1962-1964 by Kalicz, and consists of a number of pits.  
 25 The fine, hard red-slipped ware with black-painted rectilinear patterns was  
 26:2-4 all found together in the same part of the site with early incised ware.  
 The material is in Nyíregyháza Museum and the Institute of Archaeology,  
 Budapest; (to be published: Kalicz, Acta Archaeologica Hungarica 1966).

Tiszavasvari (Páptelekhat), 30 km. west of Nyíregyháza, Szabolcs  
 county; the site consists of graves and pits of a settlement and was  
 excavated by Kalicz, Makkay, and Csallany 1957 - 62. (Kalicz, 1958, 83;  
 24:1 Kutzian, 1963, 410). The material is very similar to that of Tiszavasvari  
 (Keresztfal).

Zsáka (Vizesi tanya), nr. Berettyóújfalu, Hajdú-Bihar county; the  
 settlement/

settlement site was not excavated and the material consists of surface finds collected by Söregi in 1934. Nearby, later graves were excavated in 1934 (Söregi, 1935, 67-72; Kutzian, 1963, 410). The material is in Debrecen Museum where there are at least nine sherds of the Esztár type.

There are four more possible sites in this area which may have pottery of the Esztár type, but since it has not been examined, nor is it illustrated, it is only possible to guess that it is of this early group of painted pottery from the description:

Konyár, nr. Debrecen, Hajdú-Bihar county. Surface material from the site was collected by Söregi in 1932, including some red-slipped sherds, painted in black and burnished (Korek, 1960, 35). Material in Debrecen museum.

Nagykalló (Strandfürdő), nr. Nyíregyháza, Szabolcs county, is a grave-site with black-on-red fine painted ware, found with early incised ware. (Lichardus, 1964, 862; Korek, 1957, 14-24). The material is in Nyíregyháza Museum.

Tócóvölgy (Laszlo halom) nr. Debrecen, Hajdú-Bihar county. The site was excavated by Zoltay 1927 and 1936; as well as coarse finger-impressed ware, and incised pottery, Zoltay excavated red-slipped sherds with black-painted rectilinear patterns in narrow stripes. (Korek, 1960, 34; Tompa (1929, 16). Material in Debrecen Museum.

Szamossály, nr. Csenger, Szabolcs county. The site was excavated by Söregi in 1935-37 and consists of five pits with pottery with painted black on red/buff slip. (Korek, 1960, 38). Material in Debrecen Museum.

B) N.W. Rumania (Crişana and western edge of Transilvania)

Blajareg./



Blaja, reg. Baia Mare, N.W. Transilvania. Surface finds from the site include sherds of red-slipped ware with black-painted rectilinear stripes. (Roska, 1942, 280; 1943, 75).

Ciumești, nr. Carei, reg. Baia Mare, N.W. Transilvania. A series of ten sites of the neolithic period have been excavated by Păunescu and Comșa (Păunescu, 1963, 467-475; Comșa, 1963, 477-483). The sites are distributed among dunes; one or two were thought to represent aceramic neolithic communities since there were a number of flint implements often associated with neolithic settlements such as prismatic scrapers, but no evidence of pottery associated with them. (Berciu in a communication given at University of Edinburgh 1.3.65). However, it seems from the evidence of the site Beria at Ciumești, where similar implements have been found in close association with sherds of the earlier Linear Pottery Culture incised type, that all the settlements on the dunes were neolithic and that the pottery originally associated with the flints on the 'aceramic' sites has since disintegrated, through wind and sand erosion (Păunescu, 1963, 467; Comșa, 1963, 477-480; Comșa in discussion in București May 1965).

On a site near the one which has produced incised sherds very similar to those at Barca III, there is a second site where sherds have been found on the surface; these are fine and thin, and some are tempered with broken fragments of sherds; the pottery is buff-slipped, light-brown-slipped, or red-slipped; decoration is by black- or dark brown-painted parallel thick and thin lines in rectilinear and curvilinear patterns. Those with the bright red-slip are decorated with black vertical and horizontal lines very similar to the Esztár style in E. Hungary; the dark-brown on buff sherds which Comșa compares to the material from Sátorajárhely in N.E. Hungary is later than the early Linear pottery phase and will be discussed in a subsequent chapter. (Comșa, /

Comşa, 1963, 482-483). Material in Baia Mare Museum.

Vadul Crişului (Deventului), nr. Aleşd, east of Oradea, reg. Crişana, on the river Criş Repede. This cave site was excavated by Kormos at the beginning of the century. (Kormos, 1915, 153); most of the material was from the Palaeolithic period, but Vlassa has published a few sherds of incised and painted ware as belonging to the Tisza culture (Vlassa, 1961, 17-24). The incised sherds are more reminiscent of those of the Coţofeni culture. Some of the painted sherds are typologically very similar to those of the Esztár type, with black-painted straight and wavy lines in rectilinear patterns. Others are very similar to later developments in the painted pottery of Central Transilvania, such as may be seen in layer II of Lumea Nouă site (Berciu D. and I., 1946-48, 1-43). It is, therefore, extremely interesting that these various types of painted pottery should be found in a cave in the transition area between the Alföldi and Transilvania; it is only a pity that there is no stratigraphical context for any of the sherds. Material in Cluj Mus.

Oradea Mare, reg. Crişana. There is a series of stray surface finds from the town of Oradea, and now in the museum there; some of these are red-slipped burnished sherds with black painted vertical and horizontal stripes; others are later. (Roska, 1942, 198; 1943, 71).

Sîntandrei, nr. Oradea, reg. Crişana, on the river Criş. Surface finds from this site include some red-slipped sherds with wide black-painted stripes, and other later painted sherds: dark brown on buff in curvilinear designs. (Roska, 1942, 263; 1943, 75).

#### C) N.E. Hungary/S.E. Slovakia

Two/



Two possible sites with painted pottery of the Esztár type are Lucky and Bogacs.

Bogacs, nr. Mezőkövesd, Borsod county, west of the Tisza river. 14 sherds from this site, presumably collected from the surface were given to the museum at Miskolc. Tompa regarded the incised examples as "Proto-Bükk", i.e. early linear pottery; along with the incised sherds was one sherd of red-slipped burnished ware with black-painted decoration, but the sherd is not described further, nor is it illustrated (Korek, 1960, 41).

Lučky, south-central Slovakia. This site has recently been re-excavated and has produced early linear pottery incised sherds, which will be discussed in a later chapter. When previously excavated, or investigated, however, a number of red-slipped sherds with black-painted decoration were reported. (Sztaray, 1881, 272) Lichardus considers these sherds older than those of the Sátoráljaújhely group of dark brown on buff painted sherds which develop in a later phase of the Linear Pottery cultures in E. and N.E. Hungary (Lichardus, 1962, 50; 1964, 863; Tompa, 1929, 48-54).

The shapes of the red-slipped fine pots with black-painted decoration of the Esztár type are predominately hemispherical or globular bowls on cylindrical/flaring pedestal bases, or flat-based straight-sided small pots; lugs or any other interruptions to the surface are unusual, although simple small round protuberances do occur.

On some of the sites, especially in N.E. Hungary, as well as the fine thin hard red-slipped ware, black painting occurs on a second type of pottery; this is coarser, softer ware, tempered with organic material; it seems to have been unslipped, except for a few examples such as Büdöspester cave, but with its orange/buff surface smoothed over and decorated with incised lines. The only/

only feature which distinguishes this pottery from the normal early Linear Pottery incised ware is that the incised lines are painted over in black, and the patterns elaborated by the addition of other black painted lines.

Whether or not this was the native or colonial version of the foreign ware from the south, and whether some of the incised patterns on the early Linear Pottery were inspired by the painted patterns of the fine red-slipped ware is very difficult to tell, at least until there is more evidence from stratified or systematically excavated sites. It is also impossible to make any definite pronouncements that the combined incised and painted decoration is later than the simple black-on-red painted ware, since it is also associated with incised patterns of the early Linear Pottery type, as seen in Barca III.

However, on typological grounds it seems likely that the combined method of decoration is a development from the simple method, especially since the patterns are much further removed from any possible Starčevo-Körös prototypes. It is always possible, of course, that the use of painted decoration with incised lines was much more common and widespread than is deduced from the evidence, especially if the original surface of the soft organic-tempered ware has disintegrated. This is hardly likely to be the case, however, because the surface of the incised sherds from Hungary from the Early Linear Pottery culture are mostly much better preserved than in Czechoslovakia and Germany where this theory originated.

Combined incised and painted decoration is especially common in the N.E. Hungary-S.E. Slovakia area, but it also occurs on some of the sites already discussed in association with the simple black-on-red painted pottery:

A)/

A) East Hungary

23:1 Berettyóújföldvár, Bihar county; a stray sherd which shows a smooth-surfaced sherd, tempered with organic material, incised with thin lines, which are elaborated with thin black-painted lines. (Makkay in discussion at Dunáújváros May 1965).

26:5,6 Tiszavasvari (Keresztfal) 7 or 8 sherds. Material in Institute of  
27:1,4 Archaeology, Budapest and Nyíregyháza Museum.

26 Tiszavasvari (Paptelekhát), only 1 or 2 sherds with incised and painted  
24:2 combined decoration (Kalicz, 1958, 83). Material in Nyíregyháza Museum.

B) North-east Hungary

16:2,4 Domica/Aggtelek, on the Czechoslovak border, (Nyary, 1881) (Tompa, 1929,  
17:3 50).

Bodrogkeresztur, nr. Miskolc, Borsod county, on the upper Tisza. There are five sites in this area, one of which has produced incised sherds similar to those from Barca III, associated with incised sherds elaborated with black-painted lines; there were no sherds with simple black-painted patterns without incised lines from this site. It is interesting to note that, in connection with the Bodrogkeresztur painted ware, Tompa regards the combined painted/incised decoration as belonging to the very last phase of the development of the Bükk culture (Tompa, 1959, 52-53; 1927, 269-277; Korek, 1927, 23,39,41).  
30  
34 Material in Miskolc Museum.

Büdöspester, on the upper Tisza river, nr. Miskolc, Borsod county; this cave-site was excavated at the beginning of the century by Kadič, and is important also for its Palaeolithic finds. (Kadič, 1916, 185). Most of the neolithic sherds belong to the "Pre-Classical" and "Classical" phases of the Bükk/

Bükk culture; it is worth mentioning, in this context, however, three or four sherds of coarse orange/buff ware with organic admixture, decorated by thick incised lines in curvilinear patterns and painted with red between the lines before baking. This method of combined painted/ incised decoration, where the incised lines act as borders for thick bands of red colour is very reminiscent of decoration of the south Hungarian Szakalhát-Lebő group (Banner and Balint, 1935, 76-96; Trogmayer, 1957, 19-57), and the West Hungarian Želiezovce group (Pavúk, 1962, 5), except that the painted decoration of these two latter pottery groups is applied after baking. The Szakalhát-Lebő and Želiezovce groups are both regarded as later developments of the Linear Pottery cultures, contemporary with "Pre-Classical" Bükk (Lichardus, 1964, 874-876); it is likely also that these painted sherds from Búdöpester cave belong in association with the Pre-Classical Bükk sherds. Material in Miskolc Museum.

Timar (Rakamaz), north of Nyíregyháza, Szabolcs county, on the upper Tisza river. In association with pottery which is typologically in stage of development between that of Barca III and Barca I (later Linear Pottery of S.E. Slovakia-N.E. Hungary) (Lichardus, 1964, 848-858), and has close analogies with the earliest material from Kenezlő (Tompá, 1937, 34-36), there are sherds of buff ware with incised decoration, elaborated by black paint (Tompá, 1929, 53). Material in Nyíregyháza Museum.

Sátorajáújhely, north of Nyíregyháza, on the Czechoslovak border, on a branch of the upper Tisza, Borsod county. The material from this cave-site consists mostly of "Pre-Classical" Bükk incised pottery and the buff-slipped ware with dark-brown painted curvilinear decoration which will be shown in a subsequent chapter to be associated with it. Among this pottery,/



pottery, however, there are a few sherds of earlier Linear Pottery incised ware and incised sherds with black-painted patterns. It is impossible to tell whether these two latter groups of pottery were associated with each other, since the excavation is an old one, and neither vertical nor horizontal context has been recorded. (Tompa, 1929, 51, 14; Višegrady, 1907, 285; Childe, 1929, 60).

Carbon-14 dates from the early Linear Pottery site of Hungary Czechoslovakia and Austria and East Germany confirm that the culture representing the earliest agriculturalists in these regions must have begun soon after the establishment of the Starčevo-Körös, Körös and Karanovo I/II cultures:

<u>E. Hungary</u>	<u>Tarnabod</u> , co. Hévíš	4330 $\pm$ 100 b.c. Bln 123	(Radiocarbon VI (1964) 316)
<u>N.E. Hungary</u>	<u>Korlát</u> , co. Borsod	4490 $\pm$ 100 b.c. Bln 119	(Radiocarbon VI, 1964, 316)
<u>S. Moravia, Czechoslovakia</u>			
	<u>Mohelnice</u> , nr. Olomouc	4395 $\pm$ 100 b.c. Bln 102	(Radiocarbon VI, 1964, 316)
	<u>Žopy</u> nr. Kromeriz	4480 $\pm$ 100 b.c. Bln 57	(Radiocarbon VI, 1964, 315)
<u>Saxony, S.E. Germany</u>			
	<u>Eitzum</u>	4360 $\pm$ 200 b.c. Bln 51	
		4430 $\pm$ 210 b.c. H 1487/985	

D)/

D) Summary

It has been shown in the description, and may be seen in the distribution map and figures, that the distribution of the different types of early neolithic painted pottery is very varied from one region and culture to another, nor are they always represented in the same proportions on every site of the same culture.

The white-slipped ware with red painted rectilinear and curvilinear patterns which is present on every site of the Greek Middle Neolithic (Sesklo) cultures, and the Greek Macedonian early neolithic culture, and is so typical of the Western Anatolian Early Chalcolithic sites, is almost wholly absent from the early neolithic sites north of the Greek border. It occurs by itself on only one site in South Bulgaria and one in Yugoslav Macedonia.

On the other hand, the red-slipped ware with white painted patterns, which appears rarely at Hacilar at the end of the Early Chalcolithic period, and in similar small quantities in the contemporary Middle Neolithic Greek mainland sites and Greek Macedonian early neolithic sites, is the dominant type of painted ware in the south Bulgarian Karanovo I culture; from here it spreads to the north-central Bulgarian cave-sites, and the peripheral Criş sites of Rumania, in Oltenia, Transilvania, and Moldavia, where white-on-red ware occurs as the only painted pottery on some sites, although painted pottery is in itself very rare in the Rumanian Criş settlements.

In the Yugoslav Macedonian early neolithic sites white-on-red painted ware occurs very sparsely, and in stratigraphical context as at Vršnik it appears in a lower layer than the black on red ware (Garašanin M. and D.,

1961, 27). However, at Slatina in West Bulgaria white-on-red ware appeared in a higher layer than that with black-on-red and red-on-white ware (Petkov, 1959, 100-105; 1061, 64; 1962, 43). On many sites, especially in West Bulgaria, and to a certain extent in North Yugoslavia i.e. Vojvodina, Croatia and north Serbia, white-on-red ware occurs in association in unstratified context with black-on-red ware, but is distinguished from it by the fact that the dominant patterns of the white-on-red ware are rectilinear, whereas those of the black-on-red ware are curvilinear or rectilinear.

Whereas analogies and the relative chronological position of the white-on-red and red-on-white wares can easily be seen in Anatolia and Greece, prototypes for the black-on-red ware, which dominates the painted pottery of west Bulgaria, north-west Bulgaria, Serbia, North Yugoslavia, and south-east, east and north-east Hungary, are much more difficult to find in Greece and Anatolia, unless it is to be connection with the 'urfinis' ware which is always considered 'Late Neolithic' (Milojčić, 1949, 51; 1959b, 54). It is interesting to note that it is completely absent from the Karanovo I sites of south Bulgaria.

It has never been proved that the black-on-red ware was not a locally developed dark-on-light ware in the Central Balkan area (Serbia and West Bulgaria); similarly there is no direct proof that it was, but it should be pointed out that the patterns employed on the black-on-red painted pots, including parallel vertical stripes, cross-hatched triangles, running spirals etc. are much less analogous to those of the painted pottery of Late Chalcolithic Anatolia or Middle Neolithic Greece than are the white-on-red painted patterns of south Bulgaria, west Bulgaria, Macedonia and Serbia.

The black-on-red ware occurs as far north as E. Slovakia, N.E. Hungary and E. Hungary, but only in very small quantities and on few sites.

If we are to believe the hypothesis of Kalicz after the initial appearance of Starčevo-Körös black-on-red ware, which may perhaps represent imported ware among the mass of organic-tempered incised pottery, a local type of painted pottery, black on red and known as the Esztár type, was developed by the Early Linear Pottery Culture communities, especially in the Eastern Alföldi and west Rumania; this style was perhaps stimulated by the Starčevo-Körös black-on-red ware, but in itself it formed the basis of a number of vigorous styles of painted ware in this and neighbouring regions, which will be discussed in subsequent chapters,

The almost mutually exclusive distribution of the Esztár ware in E. Hungary/N.W. Rumania and the organic-tempered ware with combined incised/painted decoration in N.E. Hungary/S.E. Slovakia may perhaps be interpreted as two local developments from the same basis, the latter evolving in the limestone caves and foothills of the Carpathians, where, it will be shown, there seems to have been greater co-habitation with the former Mesolithic hunting/fishing population who inhabited this region.

It should be mentioned here, in passing, that this combined incised/painted decoration should in no way be confused with a superficially similar method of decoration which appears on some of the pottery of the much later Šarka phase of the Linear pottery culture of West Bohemia (west Czechoslovakia). On the pots of the latter the patterns made by the paint are completely different from those made by the incised lines, whereas/



whereas on those of this eastern group of the Early Linear pottery cultures, the black paint merely emphasises the incised patterns, and to a certain extent elaborates them; or, looked at in another way, the incised lines are merely to hold the black paint; but, at least, one is dependant on the other, unlike the Šarka pottery where the incised lines are executed without paying any attention to the painted patterns.

### Distribution/

	4	1	-	-	2	1	-
	9	14	-	-	-	4	1
	9	4	-	1	-	1	3
	2	-	1	-	-	1	-
	29	4	10	-	1	13	1
	26	-	17	-	-	17	2
	5	-	1	-	-	2	2
	50	-	45	-	1	2	2
	6	-	5	-	-	1	-
	15	-	14	-	1	-	-
	19	-	19	-	-	-	-
	27	-	19	-	4	-	4
	32	-	29	-	2	-	1
	33	-	28	-	-	11	-
	35	-	25	-	-	10	-

Distribution of the different types of painted pottery in the earliest neolithic cultures of south-east and central Europe.

REGION	Total number of sites.	Sites with no record of material.	Sites without painted pottery.	Red-on-white.	White-on-red.	Black-on-red.	Black-on-red and White-on-red.
South Bulgaria (Karanovo I)	24	11	-	1	12	-	-
West Bulgaria (Karanovo/Kremikovci)	15	4	2	-	(1)	6	5
North-Central Bulgaria	4	1	-	-	2	1	-
North-West Bulgaria	9	14	-	-	-	4	1
Yugoslav Macedonia	9	4	-	1	-	1	3
Greek Macedonia							
Bosnia (Starčevo)	2	-	1	-	-	1	-
Serbia (Starčevo)	29	4	10	-	1	13	1
Vojvodina (Starčevo-Körös)	26	-	17	-	-	17	2
Croatia (Starčevo-Körös)	5	-	1	-	-	2	2
S.E. Hungary (Körös)	50	-	45	-	1	2	2
Ruman. Banat (Starčevo-Körös)	6	-	5	-	-	1	-
Oltenia (Criş)	15	-	14	-	1	-	-
Muntenia (Criş)	19	-	19	-	-	-	-
Moldavia (Criş)	27	-	19	-	4	-	4
Transilvania (Criş)	32	-	29	-	2	-	1
E. Hungary	35	-	24	-	-	11	-
N.E. Hungary/Slovakia	35	-	25	-	-	10	-

Table 2

Distribution of the different types of painted pottery in the Early Linear Pottery Culture.

SITE	Starčevo-Körös type black-on- red ware.	Esztár black- on-red ware.	Black painting combined with incised decoration.
<u>N.E. Hungary/S.E. Slovakia</u>			
Domica	*		*
Aggtelek	*		*
Arдово	*		
Kólyuk	*		
Bogacs		*	
Lučky		*	
Bodrogkeresztur (Büdöspeter)			*
Timar (Rakamaz)			(*)
Sátorajáújhely			*
<u>Total</u>	4	2	5(6)
<u>E. Hungary</u>			
Tiszaok (Berettskydűlő)	*		
Debrecen (Szabolcs utca)		*	
Debrecen (Tóópart)		*	
Esztár		*	
Tiszaok (Ókenéz)		*	
Tiszaokvari (Keresztfal)		*	*
Tiszaokvari (Páptelekhat)	*	*	*
Zsáka (Vizesi tanya)		*	
Nagyalló (Strandfürdő)		*	
(Tóóvölgy)		(*)	
(Szamossály)		(*)	
Berettyóújföldvár			*
<u>Total</u>	2	8(10)	3

Distribution of the different types of painted pottery in the Early Linear Pottery Culture sites  
(contd.)

SITE	Starcevo-Koros type black-on- red ware.	Esztar black- on-red ware.	Black painting combined with incised decoration.
<u>N.W. Rumania</u>			
Blaja		*	
Ciumesti	*	*	
Vadul Crisului		*	
Oradea Mare		*	
Sintandrei		*	
<u>Total</u>	1	5	



## CHAPTER III

### A short comparative study of the flint industries of the Mesolithic and early Neolithic cultures of central and south-east Europe

It is not intended to launch into a detailed discussion of the Mesolithic and Neolithic flint industries of the Near East, South-east and central Europe, but, using Semenov (1964), Vencel (1960), and Clark (1958) as a basis, a superficial selection of examples will be made in order to show that the flint industries of the earliest agriculturalists of central and south-east Europe were very similar from the point of view of the typology and function (as seen in the working traces) of the implements, and that these industries were markedly different in these aspects from the preceding and contemporary 'Mesolithic' blade and trapeze industries.

As Semenov has pointed out, microlithic blades in the shape of trapezes, lunates and triangles are not an indication of economic or cultural degeneration (Semenov, 1964, 63); they represent a technological advance, for the small blades were used compositely in the manufacture of a much wider range of tools, which were impossible to make, or at least much more difficult, with the limited scope of the single flint blade, such as long knives, spears or harpoons with a constant long-lasting degree of sharpness down the whole length of the cutting edge.

#### A) The distribution of microlithic elements in flint industries in Europe and the Near East

1) Microlithic implements appear as a very strong element of the flint industries of the Mesolithic and Proto-neolithic cultures of the Near East; this element is seen to decrease gradually with the establishment of an agricultural /

agricultural economy, and to disappear almost completely with the development of fully neolithic painted-pottery cultures.

There are two main variants of mesolithic or 'terminal Food collectors' in the Near East (Mellaart, 1965, 11-17; Braidwood, 1962, 117-118); one of these is centred on the western foothills of the Zagros mountains in N.Iraq, and is represented by the Zarzian culture (Braidwood, Howe, etc., 1960, 155-157 and 169-170; Mellaart, 1965, 16), as seen at Shanidar, layer B2 and Palegawra (Braidwood, Howe etc., 1960, 57-59). The Zarzian flint industry has a strong microlithic content, including geometric forms such as triangles, trapezoids and some lunates, especially in the later phase; there are also blades of normal size especially blunted-back blades, burins and round scrapers; obsidian also occurs in small quantities in the later phases. A theory has been put forward that this industry is to be connected with typologically similar assemblages north of the Caucasus as well as with the obsidian-producing area of north-east Turkey (Braidwood, 1962, 118).

This industry has been dated by the Carbon-14 method:

<u>Shanidar cave:</u>	10,050	±	400	b.c.	W 179
	8,640	±	300	b.c.	W 667

(Radiocarbon II, 1960, 183)

The other group of Mesolithic cultures in the Near East is centred further south in Palestine and the Lebanon and is represented by the Atlitian and Kebaran cultures. (Perrot, 1962). These industries also have a microlithic blade and geometric component, especially in the later phases, but their origin is thought to be different from that of the Zarzian culture (Braidwood, 1962, 118; Mellaart, 1965, 17). Their connections are more with the recently defined Mesolithic Belbaşı culture of /

of south Anatolia. (Bostanci, 1962).

It seems possible that the Belbaşı industry developed into the Beldibi industry which represents the Proto-neolithic population or incipient cultivators and domesticators of this same south Anatolian coastal region. (Bostanci, 1959, 129-173) Among an important number of microlithic implements, including lunates, there are sickle blades which would indicate a development towards more intensive collecting and gathering in the economy, although there is no direct evidence for agriculture or domestication, and hunting was still the basis of the food supply.

The Beldibi industry is very similar typologically and in the economic level it represents to the Natufian industry or culture of Palestine and Jordan as seen in the cave-sites such as El Wad (Garrod, 1957, 211-217) and open settlements such as Eynan (Perrot, 1961) and Jericho in its basal layer (Kenyon, 1960). Here again there is no direct evidence for agriculture or domestication, although the presence of sickle sheen on some of the flint implements and querns may indicate a primary form of grain-collecting. However, the large number of geometric microlithic implements and wild bones would show also an intensification of hunting and fishing. The assemblage of flint implements at Eynan is slightly different from that of the cave-sites in that microliths, especially lunates, although present are not such an important element in the industry.

C-14 date: Jericho (basal layer i.e. Natufian)  $9216^{+} 107$  b.c. P 376  
(Radiocarbon V, 1963)

On the western foothills of the Zagros mountains in north Iraq  
the /

the Karim Shahirian culture represents the 'proto-neolithic' population, (Braidwood, 1960, 157-159 and 170). The economy is very similar to that of the Natufian industry, with intensified hunting and fishing, and possible incipient agriculture. Domesticated sheep possibly appear at Zawi Chemi Shanidar (Solecki, 1963). Microlithic implements are still a component of the flint industry, but far less important than in the preceding Zarzian industry; the majority of microliths are non-descript types of blades, and there are very few true geometric forms. At Karim Shahir, 70% of the flint implements are microlithic notched blades, etc. including 'sickle' blades; only 6% are microliths, and of these the majority are microlithic back-blades. (Braidwood, 1960, 52-54). Carbon-14 dates for this culture include:

Zawi Chemi Shanidar 8915 $\pm$  300 b.c. W 681  
(Radiocarbon II, 1960, 184)

At the end of this Proto-neolithic period, it is possible to see a continuation of the Natufian stone industry in the post-Natufian level of Jericho (pre-pottery Neolithic A); however, although there is much evidence that the population of the site was increasing rapidly, there is still no more than the indirect evidence of sickle flints and querns for incipient agriculture and domestication. (Braidwood, 1962, 120; Mellaart, 1965, 32-38) Carbon -14 dates from this level include:

Jericho (Pre-pottery Neolithic A) 8300 $\pm$  200 b.c. BM 105  
7705 $\pm$  84 b.c. P 379  
(Radiocarbon V (1963))

Contemporary with Jericho Pre-pottery Neolithic A, between Anatolia and Jordan, in Syria and Lebanon, there was developing a culture with a flint industry of a completely different type from the Natufian or Zarzian traditions, and known as Tahunian as seen at Ras Shamra (Mellaart, 1965/



1965, 46). There is no microlithic element in the industry, the dominant forms being tanged, sometimes pressure-flaked, arrow and spear-heads and long sickle blades.

It seems that this late Protoneolithic industry of Syria expanded southwards for the Pre-pottery Neolithic B industry at Jericho is identical to the 'Tahunian' industry. PPNB at Jericho represents the earliest neolithic culture or pre-pottery neolithic culture of Palestine. Braidwood refers to it as the level of primary effective village-farming communities, for in this period, for the first time, direct evidence of agriculture and domestication of animals occurs (Braidwood, 1962, 121-124).

At Jericho PPNB the flint industry makes a complete break with the preceding PPNA level; the industry is completely macrolithic, including long, straight sickle blades, numerous borers, and beautiful tanged arrow-heads (Mellaart, 1965, 39-46) Carbon 14 dates include:

Jericho PPNB	6708 $\pm$ 101 b.c.	P 381
	7220 $\pm$ 200 b.c.	BM 115
	7075 $\pm$ 110 b.c.	GRN 963
	(Radiocarbon V, 1963, 83)	

In the aceramic neolithic level at Hacilar in W. Anatolia, where there is direct evidence for the cultivation of cereals, but none for domestication, the flint industry consisted of predominately macrolithic types, especially sickle flints (Mellaart, 1965, 80) C-14 dates:

Hacilar (Aceramic neolithic)	6750 $\pm$ 180 b.c.	BM 127
	(Radiocarbon V, 1963, 108)	

At Jarmo in N. Iraq, however, the microlithic element was still dominant in the stone industry (Braidwood, 1960, 44-45). The majority of the microliths was made in obsidian, and unretouched; on some of the implements /

implements bitumen was found, proving that they were hafted compositely in a wood or bone handle and secured with the bitumen. Macrolithic sickle-blades, end-scrappers, borers and round scrapers also occur. At Jarmo, there is also direct evidence for the cultivation of cereals and domestication of goat.

With the development of the pottery-using neolithic cultures, the Hassuna and Samarran culture in Mesopotamia, the neolithic and early Chalcolithic layers at Çatal Hüyük and Hacilar, and Byblos etc. in Syria, the microlithic element in the stone industry had disappeared completely. Macrolithic blades, highly-skilled pressure flaking and polished stone implements had become dominant and will be discussed below.

2) In south-east Europe, microlithic elements appear consistently in the Mesolithic industries of Greece, Yugoslavia, Bulgaria and Rumania. So far, there are no Carbon 14 dates from these Mesolithic sites, so that it is not known if they are contemporary with those of S.W. Asia or not; however, perhaps this is not such an important fact to prove, since on many stratified sites of this region, it can be proved that the microlithic Mesolithic industries were not caused by any intrusion from outside, but by local evolution.

In Greece, the same microlithic industry is later associated with an incipient agricultural economy for which there is the direct evidence of carbonised cereal grains and domesticated animal bones (Milojčić, 1960, 320 and 1956). This pre-ceramic neolithic culture occurs in the basal layers of an ever-increasing number of tells, especially in Thessaly; such sites are Argissa (Milojčić, 1962, 1-26), Arapi and Gremnos (Milojčić, 1955, 182-229; 40:115, 1956, 142-183), and Sesklo and Sufli (Theocharis, 1958, 20-86).

The occurrence of an aceramic neolithic culture in Thessaly, has prompted an outburst of hypotheses from many specialists in the pre-history of south-east Europe of the existence of similar aceramic neolithic cultures in Yugoslavia, Bulgaria and Rumania. Even though there may be no direct evidence for the domestication of animals or cultivation of plants, it seems to be frequently taken that the occurrence of a microlithic industry ipso facto should be associated with the initial stages of an agricultural economy.

In Yugoslavia, very little research has been carried out into the cultures which preceded those of the earliest agriculturalists. However, at least two centres of a microlithic industry may be distinguished. The microlithic industry of Montenegro in south-west Yugoslavia has received a great deal of attention in the last few years, especially as seen at the site of Crvena Stijena (Benac, 1958, 21-42). This cave-site was excavated in 1955 and 1956; above thick Middle and Upper Palaeolithic layers, there are 4 post-Palaeolithic layers. Layer IV was regarded as mesolithic by the author, who divided it into two sub-strata. Layer IVb2, the lower one, represents an early mesolithic industry, and an impoverishment of the forms of the preceding Layer V. Layer IVb1, which represents an middle mesolithic industry, also has a poor variety of flint implements, which include macrolithic and some microlithic blades, often retouched very deeply on one side; there are a number of small round scrapers; however, it was in their bone industry that the mesolithic population of layer IVb1 excelled, bone implements include awls, axes etc.

The stone industry, regarded as late Mesolithic, of Layer IVa, is much richer, although obviously derived from that of IVb. The implements include /

include blades, gravers, scrapers and borers; although small, none of these implements could be described as truly microlithic, and certainly not geometric. The bone industry of this sub-stratum is comparatively poor.

The flint implements of Layer III are a natural development from those of Layer IVa, with a gradual development of longer blades. They are distinguished from those of Layer IVa, however, by the fact that they are associated with rough, crumbly pottery which is decorated by impressions of cardium shells, finger-nails, combs etc. Similar pottery and associated flint implements have been excavated from the cave of Zelena Pečina, layer III, nr. Mostar in south Bosnia (Benac, 1957, 80), and, in a rather poorer version, on the Adriatic coast at Smilčić, nr. Zadar, Gudnja nr. Dubrovnik, Sredni Yamina on the Island of Cres, and the Island of Krk. (Batović, 1960, 5-26; Miroslavljević, 1959, 131-169; 1960, 204-218; 1962, 175-212).

At Smilčić, the cardial impressed ware is found stratified under a layer representing the Danilo culture, although the settlement was not continuous. The Danilo culture is regarded as contemporary with the beginning of the Vinča culture and the end of the Starčevo culture in east Yugoslavia (Benac, 1961a ). Thus, the impressed ware Layer III at Crvena Stijena is unlikely to be later than the Starčevo culture. This is supported by Carbon 14 dates from Italian impressed ware sites to which the Smilčić impressed ware has been compared (Batović, 1960).

Grotta Piccioni 4286  $\pm$  130 b.c. Pi 46

Penne di Pescara 4618  $\pm$  135 b.c. Pi 101

(Radiocarbon III, 1961, 100)

Very little information has been given on the non-ceramic and non-lithic material from the impressed ware sites; there is certainly no direct evidence /



evidence of cultivation or domestication, and, considering the infertile, mountainous limestone environment of the impressed ware sites, compared with the more hospitable and fertile situation of the Starčevo sites of Serbia, this is not surprising. On the coastal sites there is evidence for fishing, and it is probable that the economy of the inland sites was based on hunting and fishing, in spite of the presence of pottery.

It is surprising, in the face of all the evidence, that the theory, that Layer IVa at Crvena Stijena represents an aceramic neolithic culture like that at Gremnos and Agrissa, is continually being put forward (Berciu 1958, 91; 1960c, 20-21; Milošević, 1960, 320-325), although many researchers including the excavator himself (in discussion Sarajevo June 1965) regard this theory as unfounded, and that Crvena Stijena IVa represents a late Mesolithic community existing on the periphery of the area of colonisation (Nicolaescu-Plopșor, 1959, 230-235). As will be shown below this situation is very common in temperate Europe.

Another centre of Mesolithic activity (or perhaps research) in Yugoslavia, is on the south-eastern edge of the Alps, in Slovenia and N.W. Croatia in cave sites such as Velika Pečina, where like Crvena Stijena, the stratigraphy shows settlement from the Palaeolithic to the Neolithic period without a hiatus.

In Bulgaria, sites with late Palaeolithic and Mesolithic flint industries are confined to the caves of the Balkan massif of north Bulgaria except for one or two open sites in the Bulgarian Dobruža, on the Black Sea coast, a few kilometres inland from Varna. (Džambazov, 1958, 360).

The /

The Dobrudžan sites are both near Beloslav and are known as Dikilitash (Pobiti Kamani) and Gebedže. They both consist of concentrated patches of flint implements, most of which are microlithic, although not deliberately geometric.

The caves of the Balkan mountains, including Loveč, Devetaki, and Pešt, were settled in the early neolithic period (Karanova I/II culture) and in the late Palaeolithic period, but there is a thick sterile layer between the two levels. The flint industry of the late Palaeolithic layers is typologically earlier than that of the open Dobrudžan sites, and resembles more the Szeletian industry of north-east Hungary (Džambazov, 1960, 32).

In Rumania, there are Mesolithic or 'epipalaeolithic', or as others would like to call them, 'aceramic neolithic' in the Carpathian mountains and the Rumanian part of the Dobrudža (Rumanian: Dobrogea).

In the Dobrogea, the most famous example is the cave of La Adam near Constanța. The flint industry of the pre-Hamangia layer includes microlithic blades and scrapers in obsidian, probably imported from N.W. Rumania, and honey-coloured flint, imported from the Balkan mountains of north Bulgaria. The industry has great similarities with that of the Crimean "Tardenoisian" of the Ukraine (see below). It was thought also that this pre-Hamangia layer contained evidence for an early selection of sheep, goats which could be interpreted as incipient domestication (Radulesco and Samson, 1962, 282-320; Berciu in communication at University of Edinburgh 1.3.65); above this is a layer with cardial impressed ware and Hamangia comb-impressed ware; as mentioned above, the cardial impressed ware is thought to be earlier than the Criș culture colonisation of the rest of Rumania, and to represent a group of early incipient agriculturalists who developed locally from the preceding /

preceding 'aceramic neolithic' phase as an independent centre of early domestication of sheep/goats. However, there is no evidence that the cardial-impressed ware is pre-Criş in date, or even as early as Criş, and the Hamangia culture has a carbon 14 date of c.3800 b.c. It seems likely, therefore, that, as on the Adriatic coast, contemporary with the main agricultural colonisation in more hospitable regions, the population of the Dobrogea was essentially peripheral with an economy based on hunting and fishing, with perhaps a slight leaning towards the domestication of sheep which was learned from the Criş agriculturalists; impressed pottery became more sophisticated and of better quality as it evolved into the typical Hamangia pottery. Throughout the culture, however, the geometric microlithic element was always present in the flint industry, although there were also leaf-shaped arrowheads, some of which were beautifully pressure flaked, and also long flint blades and end-scrapers. (Berciu, 1955, 4-5).

In Moldavia, on the eastern edge of the Carpathians, there is a similar situation with the Mesolithic or Epipalaeolithic sites which have been interpreted as aceramic neolithic. Most important among these are the terrace sites of Ceahlău (Dîrţu) and Ceahlău (La Scaune), near Piatra Neamţ.

Ceahlău (Dîrţu) is stratified with upper Palaeolithic layers; overlying these is an 'epipalaeolithic' layer, or final Gravettian; this is basically a macrolithic flint industry, although there is a tendency towards microlithicism, especially in the little round scrapers.

Near the epipalaeolithic settlement of Ceahlău (Dîrţu) and on the La Scaune /

Scăune terrace near this, is a microlithic industry which has been compared to the Swiderian of Poland. (Păunescu, 1958, 269) Tanged arrowheads, often only 2cm. long were a very characteristic feature of the industry.

At Ceahlău (Dîrţu) above this Mesolithic layer, pottery of the coarse rusticated Moldavian Criş culture type was found in association with microlithic flint implements similar to those of the Mesolithic layer. The Mesolithic layer of Ceahlău (Dîrţu) was accordingly interpreted as an aceramic neolithic layer, although there is no proof, direct or indirect, of incipient agriculture or domestication in these layers. (Berciu 1958,91; 1960c, 27-28; 1961a, 19-20).

At Erbiceni, r. Tîrgul Frumos, on the Siret river, the Criş settlement, (Petrescu-Dîmboviţa, 1959, 57) is thought to have been preceded by a settlement with incipient domestication of animals; there are, as yet, very few details of this site. (Berciu, communication at University of Edinburgh, 1.3.65).

In Muntenia, just south of Bucureşti, is the site of Giurgiu (Malul Roşu) which has also been claimed as aceramic neolithic on account of its similarities to the industries at Beloslav (Gebedže) in Bulgaria, Murzak-Koba in the Ukraine and Karim Shahir in Iraq. (Berciu, 1958, 91; 1960c, 21-23) However, as Nicolaescu-Plopşor has pointed out, these latter flint industries are distinguished by a marked microlithic element, whereas that of Giurgiu (Malul Roşu) is completely macrolithic (a fact explained by Berciu in his hypothesis as a penetration of the Erteb/olle/Campignien tradition); moreover, the settlement of Giurgiu is on loess which was still being deposited at the time of settlement, and it is very unlikely that there was any incipient agriculture at the end of Wurm III in this region. (Nicolaescu-Plopşor, 1959, 221-235; 1956, 223-235).

In /



In S.W. Oltenia, a centre of late Palaeolithic and Mesolithic settlement may be seen at the sites of Băile Herculane and Fiera Cleanov.

The flint industry of Fiera Cleanov, near the large neolithic settlement of Verbicioara, is basically microlithic, although there are 'epipalaeolithic' elements, such as borers with a rectangular cross-section. (Berciu, 1951, 230-232; 1952, 142-148). The microlithic elements are seen also in the earliest settlement layer of the Verbicioara tell. (Berciu, 1958, 91).

Băile Herculane (Hoţilor cave) is a site with a microlithic industry in the foothills of the southern edge of the Carpathian mountains. Among the microlithic forms there are points which have been compared to the Azilian mesolithic industry of Spain, and arrowheads apparently comparable to the Mesolithic Swiderian types of Poland (Nicolaescu-Plopsor, 1957, 53-4, 1955, ; 1958, 393-399; 1959, 222). The microlithic implements do not include any geometric forms. Although the animal bones found in this deposit in the cave represent only small wild fauna, the mesolithic culture has been compared to the aceramic neolithic culture at Argissa, and Gremnos (see above) in Thessaly, and to the late mesolithic layer IVa at Crvena Stijena, and has been called 'proto-neolithic', proto-Criş, and an aceramaic neolithic site, completely without evidence (Berciu, 1958, 91; 1960c 20-21).

In Transilvania, further north, on the western slopes of the Carpathian mountains is the cave site of Sită Buzăului (Cremenea), reg. Braşov. The strata seem to have been disturbed, for among Körös rusticated sherds and microliths, there were typical long flint end-scrapers /

scrapers etc. of the Transilvanian, or Carpathian "Gravettian" industry (Nicolaescu-Flopşor, 1960, 50-56). This has prompted Berciu to regard this site, like Dîrţu as representing a pre-Criş horizon of agriculturalists (Berciu, 1961a 20).

In north Crişana, north of Oradea, in north-west Rumania there is a series of terrace sites centred round Valea Lui Mihai, with a mixed microlithic/macrolithic flint industry, and a high occurrence of obsidian. In some cases, these stone implements are associated with coarse rusticated neolithic sherds, but not always. This does not, however, indicate the presence of an aceramic neolithic culture; the phenomenon may be explained by two methods, without resorting to the fashionable aceramic neolithic explanation: either the population was one with a purely fishing/hunting economy, who later adopted pottery; or as in the Bükk culture of N.E. Hungary, there was a strong admixture of Mesolithic elements or population in the later pottery-using agricultural neolithic population, which is seen especially in the retention of a mesolithic flint industry. Unfortunately it is impossible to prove the former theory, since the excavations were carried out at the beginning of this century and no bones were kept in any quantity. (Material unpublished in Oradea Museum).

At Ciumeşti, in the region of Maramureş, nr. Baia Mare, in the N.W. corner of Rumania, at the foot of the Carpathians, there is a similar situation with a series of 10 sites in the sand-dunes. There are a number of sites without pottery, but with a geometric microlithic flint industry, and other sites where the same industry is associated with sherds of the earliest phase of the Linear Pottery culture (Comsa, 1963, 477-483; Paunescu, 1963, 467-475). Again this phenomenon has been interpreted as representing an aceramic neolithic culture (Berciu in communication at University /

University of Edinburgh 1.3.65), because of the similarity of the geometric microliths to those of the Greek aceramic microliths and because of the occurrence of the same microliths on some of the sites in association with a confirmed agricultural or neolithic economy Comşa, however, regards the sites with microliths and no pottery as representing settlements of exactly the same type as those with pottery but whose sherds have disintegrated through erosion by the strong wind and sand action in the dune area (Comşa in discussion at Bucureşti, May/June 1965). It is possible also that the sites may be interpreted in one of the two ways explained for the site of Valea lui Mihai.

Thus the hypothesis of the existence of an aceramic neolithic culture in Rumania has in almost every case been proved conclusively to be invalid. The hypothesis in itself does not really concern us in this study. What is more important is the existence of several centres in the Carpathian foothills of hunting and fishing post-glacial communities, with a partly microlithic flint industry, and the survival of these same flint industries in the Criş pottery-using cultures of these same foothills; this feature must testify to a greater Mesolithic, or hunting/fishing element in the Criş culture of these areas, as opposed to the Cris culture in the great river valleys, whose flint industry, as will be shown below, had little or no microlithic content.

Map I 3) Temperate Europe Clark has recognised several centres of a hunting/fishing population in temperate Europe who employed small blades and trapezes usually as composite hunting implements. (Clark, 1958, 39).

In N.E. France, where this type of flint industry was first distinguished it was classified as the "Tardenoisian" industry, and this /

this name has been since applied to similar mesolithic microlithic industries, especially those employing geometric forms, all over Eurasia. Thus the term "Tardenoisian" is as misleading as the similar misapplication of Palaeolithic names; for even in as relatively a small area as Temperate Europe various local groups can be recognised in the main framework of the mesolithic blade and trapeze industry by the differing proportions of various implements in their inventories; this is likely to reflect a varying emphasis on different aspects of hunting and fishing.

The blade and trapeze industries of N. Africa, Iberia, and South France form one group with features in common (Clark, 1958, 39; 27-31). A series of midden sites in south Portugal have produced Carbon 14 dates from a level with microliths which is supposedly stratified below a level with the same flint industry but with pottery:

Moita da Sebastiao	5400 $\pm$ 350 b.c.	Sa 16 (Radiocarbon VI, 1964, 245)
Cabeço da Amoreira	5080 $\pm$ 350 b.c.	Sa 195
Cabeço da Arruda	4480 $\pm$ 300 b.c.	Sa 197 (Radiocarbon VII, 1965, 238)

A second group is that of N.E. France and, closely related to it the group of sites in S.W. Germany/N. Switzerland. Stratigraphical evidence from both these groups shows a development of the Tardenoisian industry in roughly three phases (Clark, 1958, 32-33; Barrière, 1954, 115-124).

On a basis of the stratified cave-sites of Le Martinet and Cuzoul, where the blade and trapeze Tardenoisian industry overlay levels with flint implements of the Sauveterrian industry, it is possible to see a gradual disappearance of epipalaeolithic macrolithic forms which are still evident in the Sauveterrian levels, and a transition to smaller lighter blades and geometric /



geometric forms in Tardenoisian I; already in this phase these geometric forms include regular and irregular trapezes; the implements increase in quantity and variety in Tardenoisian II, including triangles, transverse arrowheads etc.

It seems that, possibly by Tardenoisian II, and certainly by Tardenoisian III, agriculture, or at least the domestication of animals, had begun to play a part in the basic economy of some of the hunting/fishing population of Temperate Europe. The presence of domesticated animal bones in a basically mesolithic context and without any associated pottery has, once again, caused vague murmurs of an expansion of a pre-pottery neolithic culture into Europe before Starčevo, Linear Pottery culture etc. especially when the Temperate Europe blade and trapeze industries are compared to those of basal Argissa in Thessaly (Clark, 1958, 33 and 42).

However, comparable stratigraphical evidence from the cave-site on the northern edge of the Swiss Juras at Birsmatten (Basisgrotte), has been accompanied by a complete series of Carbon 14 dates (Bandi, 1954; 1964, 88):

Birsmatten (Basisgrotte):

Layer 5 (Early Sauveterrian)	5510 $\pm$ 160 b.c. B 238
Layer 4 (Later Sauveterrian)	5720 $\pm$ 120 b.c. B 237
Layer 3 (Sauveterrian/Tardenoisian transition)	5020 $\pm$ 120 b.c. B236
Layer 2 (Early Tardenoisian (II))	3360 $\pm$ 240 b.c. B 235
Layer 1 (Later Tardenoisian (III))	3400 $\pm$ 120 b.c. B 234

If the Carbon 14 dates are reliable, they show that the two later stages of the Tardenoisian industry in Switzerland and S.W. Germany, when /

when signs of domestication appear, if they appear at all, were contemporary with the last stages of the Linear Pottery culture and with post-Linear Pottery neolithic cultures, when agricultural techniques had been used in the great river basins of temperate Europe for 500-1000 years.

This is not the only Carbon 14 evidence for the existence for a Mesolithic or semi-Mesolithic population using the traditional blade and trapeze stone industry contemporary with or later than the earliest agricultural colonists, but on their periphery. As will be shown later, there are a number of similarity late dates from Holland and Germany, which have often been regarded as incorrect because of contamination. To be very honest, however, we should not omit the two samples from Birsmatten, which are thought to be less correct than those cited above, because they were from unburnt bone:

Layer 3                      5530  $\pm$  200 b.c. B 241

Layer 2                      5250  $\pm$  600 b.c. B 240

However, at Birsmatten there is also evidence from Pollen Analysis. (Bandi, 1964, 86-87). The archaeological layers representing the Sauveterrian culture correspond to pollen layers E-beginning C; that is from the end of Pollen zone VI (Late Borea 1) to the middle of Pollen Zone VIIa (Atlantic); these pollen zones have been dated themselves by the Carbon 14 method in Switzerland, so that the Sauveterrian industry corresponds to a period approximately 6800 - 4000 b.c.

The Tardenoisian archaeological layers at Birsmatten correspond to pollen layers C and the beginning of B; that is the latter half of Pollen Zone VIIa (Atlantic) and the beginning of zone VIIb (Sub-Boreal), or approximately /

imately 4000 - 3000 b.c. (Nuber, 1954). Here, pottery of the middle

The archaeological material from Birmstatten shows a very similar internal development of the Sauveterrian and Tardenoisian industries to that of the N.E. French sites, except that regular trapezes are much less common.

35 Microlithic implements are present at the beginning of the Sauveterrian settlement, and make a large sudden increase in the later phase of the sauveterrian culture. This later Sauveterrian layer (4) sees the climax of the production of crescents and triangles among the microlithic implements. Irregular trapezes and microlithic blades of various types are typical of layers 2, 3 and 4, and to a certain extent 1 and 5. Regular trapezes, however, only occur in the later two phases of the Tardenoisian layers (1 and 2), including transverse arrowheads. In the last Tardenoisian phase also notched macrolithic blades become very numerous. (Bandi, 34 44 36 1964, 139-143).

45 37 A similar internal development of the Tardenoisian industry may be seen in the stratified sites of the Schwabian Alps in S.W. Germany, such as the cave site of Weilersteusslingen (Schuntershöhle), near the source of the Danube, (Nuber, 1954, 118-124), where there is an upper (III) and a lower (IV) mesolithic layer. Other examples of this S.W. German centre of blade and trapeze industries are Ruppertshofen, Bargau, Weiler in der Bergen, and Waldstetten (Nuber, 1954, 114-117) and the settlements on the Federsee (Reinerth, 1936, 40-58).

A special problem is set, in relation to the dating of the Birmstatten layers, by the recently excavated stratified site of Lauterach on the upper Danube /

Danube, near Ehrlingen. (Taute, 1964). Here, pottery of the middle linear pottery, dated in Holland not later than c. 4000 b.c., is stratified above what Taute regards as late Mesolithic. It is possible, however, that the sequence of development of the late Mesolithic industry, as seen at Birsmatten, was interrupted on the upper Danube by the intrusion of new forms and techniques associated with the Linear Pottery cultures. This site will be discussed again below in reference to the mesolithic admixture in the Linear Pottery culture settlement in this region.

The blade and trapeze industries of the Low Countries are centred on the highland plateau of Belgium and the sandy areas of Belgium and Holland.

38:  
1-74 Although it is possible, with the aid of statistical methods, to distinguish four or five groups within this small area, (Bohmers and Wouters, 1956, 36-37), there are two basic groups: the lowland sandy area group, whose trapeze industry is very similar to that of N.E. France though with some N.German elements (Clark, 1958, 35) and the group distributed on the highlands of south Belgium who tended to conserve the non-geometric forms of the microlithic elements, similar to the Sauveterrian industry of E. France etc.

Pollen analysis dates the Dutch and Belgian Middle and Late Mesolithic to Pollen zones VI (Late Boreal) and VIIa (Atlantic) (de Laet, 1958, 52). Carbon 14 dates very similarly for the "Tardenoisian" blade and trapeze industry from 6500 - 4200 b.c.:

Milheeze	6550 $\pm$ 160 b.c.	GRN 2318
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Oirschot	6080 $\pm$ 60 b.c.	GRN 1659
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	5550 $\pm$ 70 b.c.	GRN 1510
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(Radiocarbon V(1963)170)



de Leijen	5280 $\pm$ 65 b.c.	GRN 1683	
	5200 $\pm$ 140 b.c.	GRN 685	(mostly non-microlithic)
Haule	6012 $\pm$ 370 b.c.	C 627	
Tilburg (Labe)	4550 $\pm$ 120 b.c.	GRN 1597	
Maaheeze	4280 $\pm$ 115 b.c.	GRN	

(Bohmers and Wouters, 1956, 35-38)

Bohmers regards the last two dates as contaminated. In this case none of the sites with basically microlithic industries are later than 5500 b.c. Thus it is suggested that at least in Holland there was no contact between the Mesolithic and intrusive Neolithic populations, partly because of the hiatus in Carbon 14 dates and partly because the distribution of the two was quite different. (Bohmers, 1964). However, pollen analysis has proved that some of the Mesolithic sites of Holland and Belgium lasted at least until the second half of the Atlantic period (zone VIIa).

38: The microlithic industry of N.W. Germany is distributed between the river Elbe and Rhine on the lowland plain. There are very few true geometric forms, wide trapezes being very rare. The forms of microliths which are seen in the E.French/N. Swiss/S.W. German "Sauveterrian" industry such as triangles and backed-blades, are much more common in this industry. (Schwabedissen, 1962, 254-258; 1944).

75-86 The same may be said of a centre of mesolithic population with a microlithic blade industry, on the upper Elbe river in the south part of E. Germany (Feustel, 1957, 22-47). The sites of Drackendorf, Kleinebersdorf, Höhendorf, Göritzberg etc. are all open sites on dunes; there is no C-14 or pollen analysis from them available, so that it is hardly possible to tell their age in relation to the early Linear Pottery sites found on the loess along the Elbe, which were not very far away.

39 Feustel /

Feustel believes there must have been some contact or overlap because of the partial adoption of some microlithic forms in the flint implements by the later Linear Pottery Cultures (Feustel, 1957, 46).

A similar non-geometric microlithic mesolithic industry may be seen 1-40 further up the Elbe in North Bohemia (N.W. Czechoslovakia), on sites which are distributed exclusively next to rivers and lakes or on dunes. (Klíma, 1963, 155; Vencl, 1964a, 9). The distribution of the mesolithic hunting/fishing population is, therefore, completely complementary to that of the intrusive agriculturalists represented by the Linear Pottery culture. Although it is possible that the two populations were partly contemporary, there seems to have been no contact between the two, probably because the mesolithic population, to judge from the number of sites discovered, was so small as to be ineffectual in comparison to the very large innovating agricultural population of the loess area. As will be shown later, microliths and other local mesolithic forms are virtually absent from the flint industry of the Linear Pottery culture of Czechoslovakia. (Vencl, 1960, 63-72).

Further east there is another concentration of mesolithic settlement in the foothills of the western extension of the Carpathian mountains along the upper Vistula in S.E. Poland and, on the other side of the Czechoslovak border, in N. Moravia/N.W. Slovakia. The industry of this group is a microlithic one with non-geometric forms predominating over geometrics such as trapezes. The industry has been called "Tardenoisian", although the resemblance to the Tardenoisian of N.E. France is of varying degree in different local groups.

The S.E. Polish centre, with its extension into N.C. Czechoslovakia, as /

as seen in such sites as Grzybowa Gora, Nowy lyn, Marcinkovo etc.

(Jazdzewski, 1965, 57) is especially important in this study since it was into this more highly populated area that the Linear Pottery culture colonisation took place.

41 The site of Grzybowa Gora shows possible traces of a flint factory; from the 1959 excavation it is possible to recognise two phases of the microlithic blade industry: an earlier phase when backed blades, with steep retouching were very common, and a later phase with a higher occurrence of trapezes and other geometric forms. (Ginter, 1965, 5-33).

Another more important centre of mesolithic population in Poland was the dune area of north and central Poland, especially between Poznan and Warsaw has a flint industry with a higher proportion of trapezes etc. than that of the loess settlements of south Poland. However, there are also the backed-blades, crescents and triangles which have been called a "Sauveterrian" element. At one site in this region: Witowie, Łęczyckim reg. nr. Poznan stratigraphical evidence on the sand dune shows an earlier layer with the more macrolithic Seiderian industry below an upper layer with an industry apparently in transition between Swiderian and Tardenoisian traditions (Chmielewska, 1957, 11-23).

42 There are scattered sites of a hunting/fishing population with a microlithic flint industry on the low Czech-Moravian hills, the South Moravian karst country, and an extension in the low hills of North-east Austria. This industry has been called "Tardenoisian", although the typical trapezes are almost entirely missing (Klíma, 1953, 297-302; 1963, 155). Most of the sites are represented only by surface collections, although /

although excavations have been carried out on a few of the Moravian sites such as Sakvice, Smolin and Dolni Vestonice, and in Austria at Linberg (Muhlberg)(Gulder, 1953, 9-18). The distribution of these mesolithic settlements is, as in Bohemia, quite outside that of the Linear Pottery sites.

South Bohemia and east Bavaria is a predominately sandy and not naturally fertile area, and was never settled by the agriculturalists with the Linear Pottery culture. However it was the scene of another centre of Mesolithic settlement with a flint industry which has been compared rather misleadingly to the Azilian industry of Iberia (Klíma, 1963, 155). Examples of this group are Tasovice, Sous, and Zatyni in S. Bohemia (S.W. Czechoslovakia) (Žebera, 1946, Prošek, 1951, Mazalek, 1952; Beneš and Vencl, 1966, 67-71; and the stratified cave of Ensdorf, east of Munich in Bavaria (S. Germany), (Gumpert, 1933, 70; Barrière, 1954, 285-287). The flint industry includes many more regular geometric forms, especially triangles, but also trapezes, than the S. Moravian/N.E. Austrian group; it is to be compared much more to the industry of S.W. Germany such as at Weilersteusslingen (Nuber, 1954, 113-132). The stratified levels of Ensdorf show the same internal development of the microlithic blade industry as in S.W. Germany, with trapezes occurring only in the last layer.

Mesolithic settlement seems to have been extremely sporadic in Hungary. It is difficult to say if this is due to lack of research into this particular problem, or to lack of well-drained land and suitable game. The north side of lake Balaton shows evidence of settlement by an Upper Palaeolithic hunting population, but there is no evidence of a later population with a microlithic flint industry.



The exception is the comparatively dense settlement of the limestone hills and foothills of the Carpathians of N.E. Hungary and S.E. Slovakia (S.E. Czechoslovakia), where sites in caves and especially dunes have produced a microlithic flint industry similar to that found in the N.W. Rumanian sites (see above); the industry includes especially steeply -retouched back blades, crescents etc. (Hillebrand, 1925, 81-84).

This was also an important region for the development of what has been called an "epopalaeolithic" industry, in which the Upper Palaeolithic macrolithic forms continued to be developed; it has not been specified in what chronological relationship the epipalaeolithic settlements stand to the mesolithic dune settlements; it is interesting to note, however, that the subsequent neolithic cultures in this area adopt the mesolithic and epipalaeolithic manufacture of obsidian implements and many microlithic forms, as will be described below.

Unfortunately, it is not within the scope of this study to discuss the mesolithic settlement and industries of the European part of the USSR. It is necessary, however, to mention the distribution of the microlithic flint industries in the USSR. Firstly, in the N.W. Ukraine, there is a flint industry very similar to the "Tardenoisian" of S. Poland, in that, although it is basically microlithic, there are very few trapezes, and predominately narrow blades with steep retouching down one side; an example of this industry is the site at Kudlayevka (Briussov, 1957, 221-222). The sites with this microlithic industry are scattered in the Upper Dnieper/Desna basin.

On the lower Dnieper, the Crimea, and the border of the steppe country /

country north of the Black Sea, that is the S. Ukraine there is a large centre of mesolithic population with a geometric microlithic blade industry variously called "Pontic Tardenoisian", "Crimean Tardenoisian" or "Murzak Koba" industry (Gimbutas, 1956 ; Clark, 1958, 37; Sulimirski, Prehistoric Russia (in press) 16-20). The industry occurs in caves in the Crimea, and open sites on the steppe and dunes. Five sites with a similar industry have recently been excavated between the S. Bug river and the Prut river which marks the Soviet border with Rumania (Gurina and Borisovski in discussion 43:16-25 Leningrad August 1964). Grebeniki, an open site on the steppe of the lower Dniester near Odessa is an example (Borisovski, 1961, 27-30).

The Pontic "Tardenoisian" industry is seen in its most typical form in the caves of the Crimea, such as Murzak Koba, Shan Koba, Fatma Koba etc. (Bibikov, 1940); microlithic implements prevail, especially trapezes, micro-scrapers, and blunted-back blades. The same forms continue in the Crimea even when pottery is being manufactured, as is seen by the stratigraphy 43:34-40 at Shan Koba and "neolithic" sites such as Kava-Aras and Nižne Šilovskaya (Formosov, 1962, 102-149). The mesolithic industry of Murzak Koba has been compared to the flint industry of N. Iraq of the "protoneolithic" culture as seen at Karim Shahir (see above). (Gimbutas, 1956 ). Typologically, there are many similarities between the two industries, although there is a virtual absence of trapeze and other geometric forms in the Karim Shahirian industry. But whereas the latter industry is connected with evidence of possible incipient domestication of animals and cultivation of plants, there is no such evidence at Murzak Koba, except the domesticated dog; there is very little evidence for the domestication of animals even on the pottery-using neolithic sites of the Crimea. (Formosov, 1962, 109).

A connection between the Crimea and west Asia is perhaps not so surprising if one remembers that microlithic implements, including trapezes, occur on neolithic sites such as Odisi in West Georgia (material unpublished in Tbilisi Museum); they occur with coarse pottery and a remarkable series of macrolithic multi-notched flint and obsidian blades. No discoveries of mesolithic sites have yet been made in USSR south of the Caucasus but if they do exist, they are likely to produce a blade and trapeze industry similar to that of the Georgian Neolithic flint industry; but perhaps this is idle speculation.

B) Flint implements associated with the earliest agriculturalists

South-east and Central Europe

1) It has been shown above that, in the Near East, the earliest direct evidence for the domestication of animals and cultivation of plants, as at Jericho PPNB, is accompanied by a basic change in the flint industry, from predominately microlithic forms to macrolithic blades, especially the long sickle blades, borers, and tanged arrowheads.

The different industry becomes even more distinctive with the development of the pottery neolithic cultures, and later the late neolithic/early chalcolithic cultures. In these latter also, axe/adzes of polished greenstone etc. become very common.

The newly-developed implements must represent a new set of functions being performed, just as a new predominance of macrolithic implements, especially "sickle" blades represents a new predominance of the functions or occupations associated with these implements; both these features may be connected with the changing basic economy expressed also in the animal bone and plant evidence: a development from intensive collecting and hunting to deliberate production of food; as the agricultural economy developed the

the implements connected with hunting etc., which can be recognised not only by their form but also by working-traces, gradually disappeared, and those connected with cultivation and domestication developed and were elaborated constantly to keep up with the evolving economy. (Vencl, 1960, 2).

All this is very obvious; that flint and other stone implements are as important as other aspects of material culture in providing a full comprehensive picture of any prehistoric community especially the relationships between a culture with one type of basic economy and another culture with a completely different basic economy. Yet it is surprising how many specialists have neglected to give details and adequate illustrations of the flint and other stone industry of such important cultures as the Sesklo culture in Greece, and the Starčevo, Karanovo I and Körös cultures.

One of the implements which became very important with the development of the new economy was the long flint blade, with very little retouch, but nearly always with an area where the surface had a shiny gloss (Semenov, 1964, 113-122). After many experiments, it was found that the wide area of gloss could most easily be produced by continual friction with grass, reeds, or the stalks of cereal grain (Curwen, 1930, 184-186). This type of implement has accordingly been interpreted as a sickle blade, to be used compositely, with other similar blades hafted in a bone or wooden handle. By a detailed analysis of the area of gloss on the sickle blades, it is possible to tell exactly how it was hafted into the handle. For instance those of neolithic Egypt, Djeitun in Turkmenia (Masson, 1964, 21-37), and Sialk I in Iran (Ghirsham, 1938), are hafted horizontally into a straight handle; whereas those /



those of Hassuna, Karanovo I (Georgiev, 1958, 369-387) and, as will be shown below, of the Linear Pottery Culture (Behm-Blacke 1963, 141) are set diagonally in a crescent shaped handle; thus, the former blades have an area of gloss parallel to the cutting-edge, and the latter have a glossy area across one corner of the blade. (Bibikov, 1962, 3-24).

The other important group of stone implements used by the developed agricultural communities was the polished stone axe/adze group. Their function was probably not directly agricultural: that is, they were not employed as hoes or ploughs, but were used in general wood-working and preparing the ground (Semenov, 1964, 128; Vencel, 1960, 11-16).

Both these groups appear in the Late Neolithic/Early Chalcolithic cultures of western Asia, contemporary with the main expansion of these cultures to Greece, Bulgaria and Yugoslavia.

2) Thus, along with monochrome, and then painted pottery, macro-lithic flint sickle and other blades and greenstone etc. polished axe/adzes may also be added to the intrusive neolithic culture in Greece, Bulgaria and Yugoslavia, as seen in the Early and Middle Neolithic cultures of Greece and the Karanovo I and Starcevo cultures.

Stone implements, except for the flat polished stone trapezoid axe/adzes have very rarely been recorded in reports of the Greek neolithic sites. However, those from the Greek Macedonian site of Nea Nikomedea are typical of all early neolithic blade industries in South-East Europe, including short 3-4 cm. sickle blades with a diagonal area of gloss, longer 4-6 cm. blades with retouching down one or both edges and short scrapers. (Rodden, 1962, ).

In /

In the material culture of the Karanovo I/II culture at the base of many of the tell settlements in Bulgaria the flint blade industry exhibits the same forms as in Greece and late neolithic/Early chalcolithic Anatolia. There are sickle blades 3-4 cm. long with a diagonal area of gloss across one corner of the blade; in at least two sites, Karanovo and Azmak, both in south Bulgaria curved antler sickle handles, 25-30 cm. long, have been found; (Georgiev, 1958, 369-387) at Karanovo the flint blades were still partly adhering to the slot in the handle.

There also occur longer blades, often with the bulb of percussion remaining, or even emphasised; these blades, 4-7 cm. long, are very typical of the early neolithic flint blade industry in south-east Europe, and become even more important in the Linear Pottery cultures of Central Europe, where they appear to take over the function of the shorter sickle blades. In Bulgaria they are made in the beautiful honey-coloured flint of the Balkan mountains; they have shallow retouching down the complete length of one or both edges; unfortunately it was not possible to examine them closely to determine the form of working traces, but on superficial examination it is likely that they served as an all-purpose cutting instrument.

In the caves of north-central Bulgaria, e.g. Loveč (Džambazov, 1963, 224) and Devetaki (Mikov and Džambazov 1960), although a hiatus and complete break with any Palaeolithic traditions of the preceding layers are seen in the early neolithic layers, the flint industry is richer than in the settlements of the Marica valley and Sofia basin, probably because of the abundance of local flint, and special forms were developed, /

47:1-3, 5-6 ed, such as the heavily retouched pointed blades. It is also probable that, due to a slightly different economy in the cave-district of the N. Balkan mountains, relatively more emphasis was laid on flint blades, whereas in the valleys and lowland plains it is obvious from their greater abundance, that the polished stone trapezoid axe/adzes, 6-12 cm. 46:6-7, 14, 16 long were the main working tools. In fact they remain the main working tools of the early neolithic colonists in south-east and central 47: 4,8 Europe. (Vencl, 1960, 3).

The blade industry of the Starčevo culture of Yugoslavia is dismissed in a sentence in the monograph of Draga Garašanin, as consisting of a very few burins and blades of flint and obsidian, and as being unimportant (Garašanin D., 1954, 48). There are also very few ever published with the rest of the material culture from the sites of 45:21-33 the Starčevo culture. The majority of the blades examined were long blades 4-6 cm. long with steep retouching down one or both edges, and nearly always with the bulb of percussion retained, leaving one bulbous end, perhaps to facilitate hafting into a bone or wooden handle; some 47:9-11 of these longer blades show traces of "sickle-gloss" such as those from Vršnik in Macedonia (the blades are unpublished in Stip museum). Pointed 48:7-10, 12 implements with steep retouching on each side such as those from Gornja Tuzla also occur (Čović, 1961, 88), and a number of short scrapers. 45:30-3, 31 However, of rather greater importance are the polished stone trapeze 47:13-14 axe/adzes with more or less flat profile, just as in the Karanovo I/II 48:11 culture. (Garašanin D. 1954, 48-49).

A very similar repertoire of polished stone and blade implements may be seen in the transitional Starčevo/Körös culture, although the steep /

steep retouching on the 4-6 cm. blades is not so common; retouching occurs, if at all, only down one edge or part of the edge; again the bulb is retained and a shiny gloss can be seen across the corner of many of the blades, as at Vinča (unpublished in the Vinča Museum at the University of Belgrade).

Among reports of the Criș culture settlements in Rumania, there is again very little recorded evidence of the polished stone and blade industry, although what there is, is very much in accordance with the evidence from the early agricultural settlements of Bulgaria and Yugoslavia. In the Rumanian Banat, from the site of Beșenova Veche near Timișoara, for example, there is a series of flat trapezoid polished stone axe/adzes, with an average length of 11 cm., and long flint blades 4-7 cm. long, with the bulb retained and retouching down one or both edges, although the retouching is not so steep as that on the Bulgarian early neolithic blades. As mentioned above this was the only site in this region which produced painted pottery (Nagy, 1911, 147-164; Milleker, 1938, 103).

The stone industry of the Moldavian Criș culture is similar to that further south, consisting of the same long retouched blades, smaller blades with only one corner retouched (these have not been examined for "sickle-gloss") and flat trapezoid polished stone axe/adzes. However, there also occurs on these sites, for example Perieni, where material of the Criș culture is stratified below that of the later Linear Pottery culture, a more rectangular, longer, narrower polished stone axe/adze, with a thicker more oval cross-section. (Petrescu-Dîmbovița, 1957, 65-82). This type of polished stone axe becomes much more common in the Linear Pottery /



Pottery culture stone industry (Venci, 1960, 23-31). This is possible further proof that the Moldavian Cris culture represents the latest expansion of the agriculturalists with this culture as is also shown in their pottery and difference in economy with a predominance of cattle among the domesticated animals (Comşa, 1959c, 173-184).

0:10-16 The Cris culture of Transilvania, as seen at Leţ (Zaharia, 0:1-2 1962, 14-16) and Gura Baciului (Băztărau) (material unpublished in Cluj Museum), both of which have produced painted pottery, has the same long retouched blades of obsidian and flint, often with the end opposite the bulb of percussion chipped into a rounded point; smaller blades 3-4 cm. long often have a diagonal area of "sickle-gloss" across one corner; the polished stone axe/adzes tend to be less trapezoid than in Yugoslavia and Bulgaria, although the cross-profile still represents a more or less flat rounded rectangle. The polished stone implements in this area also often have a large area of their surface in the blade region chipped.

In her monograph on the Körös culture of S.E. Hungary, I.B. Kutzian dismisses the blade industry in half a sentence and devotes the rest of the small section on the stone implements to the polished stone axe/adzes (Kutzian, 1947, 9). These latter are certainly more important and form the basic working tools in the Körös culture; there are two types: the short wide trapezoid implements with a flat cross-section, which occur especially in the Starčevo and Karanovo I cultures; and a longer narrower implement, though still of a trapezoid shape, with a cross-profile which, although still fairly flat, tended to become slightly plano-convex.

However flint blades are not entirely absent from the sites of the Koros /

Körös culture. Those from Kopancs (Kovacs tanya) and (Zsoldos tanya) which were examined, were blades 3-5 cm. long; those with little or no retouching on the edge had a diagonal glossy area across the corner of the blade opposite the end with the retained bulb of percussion; those with regular retouching down one edge had scratches all down the same edge at an angle of approximately  $45^\circ$  to it; there were also small short scrapers. (Material in Hódmezővásárhely Museum) (Banner, 1932, 32-48).

2) In the Linear Pottery Cultures of Temperate Europe, the flint blade and polished stone industry like the pottery represents an element from the south-east European cultures; the agriculturalists were settling areas which, as has been shown in the previous section, were uninhabited by any preceding or contemporary population. This was the situation until the expansion of the agricultural population took place in areas already inhabited; on the upper Danube, the middle Elbe and upper Vistula valleys, and beyond, the hunting/fishing population, with a microlithic blade industry, which has been proved by Carbon 14 and pollen analysis to be partly contemporary with the Linear Pottery culture expansion, must have come increasingly into contact with the agricultural colonists; for in these areas, although the pottery styles are still almost identical to the pottery of west Czechoslovakia, the flint industry is hardly recognisable as belonging to the Linear Pottery culture, being almost totally microlithic or geometric.

However in Czechoslovakia, Hungary, and some of the more eastern Austrian sites, the blade industry of the Linear Pottery culture remains macrolithic, with little internal development throughout the evolution of the /

the culture. The real change in the industry comes after the complete disintegration of the Linear Pottery cultures, when copper, although not a basic element of the economy, was being in Hungary, and south-east Europe; at this time there is a great development in very long blades, with an average length of 15-20 cm. such as those of the Tiszapolgar and Lengyel cultures.

a) In the early Linear Pottery culture of the Alföldi in E. Hungary, blade implements, as in the Körös culture, are comparatively rare, and are made very commonly in obsidian. Most of the blades are small, 3-5 cm. long, with shallow retouching down one edge, or part of it, or very rarely down both edges. Since most of them are made of obsidian, it is impossible to recognise any glossy area, the whole surface being glossy; however there are often scratches visible on the unretouched side, running diagonally away from the edge; examples of these blades are those from Hortobágy (Faluvéghalom) (material unpublished in Debrecen Museum) and Tiszavasvári (Keresztfal) (Material unpublished in the Institute of Archaeology, Budapest). The typical polished stone axe/adzes of the early Linear Pottery culture in this region are the short trapezoid implements, 5-10 cm. long, with a flat rectangular cross-section, just as in the Körös, Starčevo and Karanovo I cultures.

The obsidian from which the Alföldi blades are made, comes from the low mountains of N.E. Hungary/S.E. Slovakia. There are almost identical obsidian blades from the early Linear Pottery sites of this area, such as those from Kőlyuk, which also produced painted pottery (see above) (Korek, 1957, 14-24; material in Miskolc museum), Aggtelek cave, on the Czech /

53 Czech border by Domica, which also produced early painted pottery (Baro, Nyary 1881) and Istállóskő cave (Tompá, 1929, 20-21).

Apart from the smaller obsidian blades, there are longer flint blades, 4-7 cm. long, with retouching down one or both edges, and often on the end opposite the one with the retained bulb of percussion; a few of those examined showed a glossy area across one corner, but this feature was comparatively rare. Polished stone tools of this early stage consisted mostly of the smaller trapezoid axe/adzes with a flat rectangular cross-profile, although longer examples with a slightly plano-convex cross-profile do occur. Thus, apart from the predominant use of the local obsidian, and the rarer occurrence, therefore, of "sickle-gloss" on the blades, the stone industry does not differ so greatly from that of the early neolithic cultures further south; the blade industry certainly cannot be said to contain a microlithic content. However, bone evidence and the situation of the settlements themselves predominately in caves points to a slightly different economy in the Linear Pottery culture and its successor the Bükk culture in N.E. Hungary/South-east Slovakia.

On the dune settlements of N.W. Rumania, however, the blade industry associated with pottery of the early Linear Pottery culture phase, including painted pottery, is much richer and contains a large number of geometric microliths including trapezes. The nearest analogies to this blade industry, as seen at Ciunești (Păunescu, 1963, 467-475; Comșa, 1963, 477-483) are in the mesolithic settlements of the N.W. Ukraine such as Kudlayevka and especially those of the Upper Vistula and Upper Northern Bug rivers in south Poland such as Grzybowa Góra, although the blades with steep retouching down one side which are typical of the south Polish industry are virtually /



virtually missing in the Ciunești industry.

54:  
61:1-9  
55:  
62:1-22

The Ciunești industry is not completely microlithic; while c. 70% of the flint and obsidian consists of unretouched blades, probably mostly representing waste pieces, of the total number of 2930 pieces, 83% are microlithic, that is smaller than 3.5 cm., and 17% are c. 4-7 cm. long. This small percentage of macrolithic blades consists of blades with retouching down one, and often both sides, which could be similar to those of the early neolithic cultures further south and west, but it is difficult to tell without examining the profile etc. of the implements. However, there are certainly one or two examples of the definitely neolithic short trapezoid polished stone axe/adzes (Comsa, 1963, 478). As mentioned above, this very mixed material, consisting of 90% obsidian implements, and 10% flint, has been interpreted in various ways; it is possible that material from different settlements and ages has been disturbed and mixed together by wind action in this sand dune area, so that a mesolithic microlithic industry, similar to those further north, has become mixed with an early neolithic stone and blade industry with its accompanying pottery, which represents an expansion of the earlier Linear Pottery culture from the west; Paunescu and Comsa, however, prefer to believe that all the material is contemporary and from one settlement, and that it represents acculturation to the intrusive agricultural colonists by a surviving local mesolithic population, with analogies in the later Linear Pottery culture expansion in S.W. Germany, Holland, N.W. Ukraine etc.

56:  
63:1-8  
57,58

In west Hungary, even in the earliest phase of the Linear Pottery culture a great increase in the manufacture of flint implements is evident, compared with those of east and north-east Hungary. From an examination of the /

the blade industry of Bicske (Galagomashégy) near Székesfehérvár (Petres, 1959, 5-14), Zalavár, N.E. of Lake Balaton (material unpublished in the National Museum, Budapest) and Keszthely west of Lake Balaton (Dornay and Csalog, 1945, 1-7), it is possible to see that, although there are the short blades 3-4 cm. long, and the blades 4-7 cm. long "sickle-gloss" appears on both types, in a diagonal area across one corner often on both surfaces, which is almost invariably on the opposite end to that with the retained bulb of percussion. Of the six blades from Bicske which have a glossy area that is visible with the naked eye, at least 2 are longer than 4 cm.; at Keszthely the only blade with gloss is 4.6 cm. long. The number of long blades with sickle gloss increases with the distance up the Danube river. Many of the blades are retouched on one or both edges, often on both surfaces; it is interesting to note in that association with the new features of sickle gloss on long blades and both surfaces, and retouching on both surfaces, there occurs also the feature of diagonal scratches often in the glossy area, or at least on the same surface as the glossy area; this occurs on two out of three of the blades with "sickle-gloss" from Zalavár, and 2 out of the 6 blades with gloss from Bicske. It must be assumed, therefore, the same functions as in other early neolithic cultures were being performed by the same implements but by a different method, or that new functions caused by a slightly different economy had been evolved for the old implements.

57:

63:17-18

The polished stone implements of the west Hungarian early Linear Pottery culture consisted of the short trapezoid axe/adzes with a flat rectangular cross-profile, and a few of the longer, narrower axe/adzes with a thicker cross-profile. The true "shoe-last" axe/adzes do not appear/

59:9  
66.9 appear until the next, middle phase of the Linear Pottery culture, but apart from the appearance of this new form, very little internal development can be seen in the blade and polished stone industry of the Linear Pottery culture of Central Europe.

b) The stone and flint blade implements of the early neolithic agriculturalists in Czechoslovakia and East Germany have been much less ignored than in the other parts of central and south-east Europe. Several hypotheses for contact between Mesolithic and Neolithic populations in Czechoslovakia and East Germany have been put forward (Bicker, 1933, 255; Feustel, 1957, 27-47; Mazalek, 1953, 203-234; Zotz, 1941, 1-20). These have been based either on seeing Mesolithic elements in the Linear Pottery culture flint industry, as Mazalek has done, or neolithic elements in the latest mesolithic microlithic industry. As will be seen below, this is quite clearly the case in S.W. Germany, Holland etc. where there was a much denser mesolithic population settled; in Czechoslovakia, where Mazalek has made his survey, however, as was shown above, the hunting/fishing population with a microlithic blade industry was very scarce except in areas never settled by a neolithic population, like south Bohemia. However, as Venc1 has pointed out, many of the claimed mesolithic implements such as trapezes and notched microlithic blades come from surface collections with which Mazalek worked and are therefore not truly valid; (Venc1, 1960, 63-72). And if one might venture an opinion, it is the generalities which make up the basis of the interpretation of prehistoric communities not the exceptions especially where stone industries are concerned, so that one trapezoid microlith on one, or even two or three linear pottery culture sites in Moravia, out of a total of at least 500 sites cannot possibly be interpreted as contact with a microlith-producing mesolithic population.

Vencl, in his study of the polished stone implements of the linear pottery culture (1960, 1-43) and their function (1961, 678-693) as the most important working implements of the earliest agricultural communities has worked out a possible chronological classification of the axe/adzes. The flat trapezoid axe adzes remain unchanged throughout the linear pottery culture; the long rectangular axe/adzes, however, which appear in the early linear pottery culture still with a comparatively flat plano-convex cross-section, gradually develop along with the evolving pottery and other aspects of the material culture; the back of the axe/adze gradually becomes higher and narrower, similar to those of the Vinča- Tordoš culture (Garašanin M., 1951, 46) and known as "shoe-last" axe/adzes.

The flint blade industry has not been treated in so much detail, except from the point of view of the function of some of the blades as sickles and reaping-knives (Behm-Blancke, 1963, 104-175). This study is based especially on an analysis of the very rich flint inventories of the two east German sites of Dorna and Nerkewitz, which will be discussed below.

Behm-Blancke recognises 6 groups of harvesting implements in the flint industries of the early neolithic cultures of central and south-east Europe; (Behm-Blancke, 1963, 119-132) a) straight-handled reaping knives as seen in Fayum and possibly preceramic Argissa in Thessaly b) Arched reaping knives as in Jericho PPNB, Karanovo I, the Linear Pottery cultures in Central Europe and later the Tripolye culture.

c) Arched sickle as seen in Egypt, but does not occur in Europe.

d) Angled sickle with a blade in the angle occurs in Ubaid, N. Africa, the north Italian Solferino culture, the Lengyel culture in S.E. Hungary, and is often associated with earliest copper-working.

e) /



e) Angled sickle with separate blade

f) Angled sickle with leaf-shaped blade.

Only the second type need concern us in this study, since it is obvious after an analysis of the flint blade industry in Moravia and Bohemia that there was little evolution in the type of sickle or blades used in it during the Linear Pottery culture.

In Moravia (central Czechoslovakia), especially the southern part, there is an important concentration of Linear Pottery culture settlement in the rich loess basins, which follow the rivers Morava, Dyje, Jihlava etc. which are all tributaries of the Danube. (Tichý, 1962, 245-305). The blade industry from the sites of Žopy and Velatice was examined in detail.

Žopy, nr. Holešov, just north of Gottwaldov in east Moravia, has pottery from the earliest period of the Linear Pottery culture, contemporary with the earliest neolithic pottery in west Hungary, and only just later than that of east Hungary. The blade industry consists of rather irregular blades, 3-5 cm. long, none of which bear "sickle-gloss"; only part of one edge is ever retouched, and this sometimes shows scratches running diagonally away from the edge. (Tichý, 1962, 268; material in the Institute of Archaeology in Brno).

The site of Velatice, nr. Brno has pottery which is generally rather later than that of Žopy, representing the beginning of the evolution of "Notenkopf" style of decoration. Only one blade has a glossy area, and this is 2.5 cm. long; besides the short blades, there are longer blades with one or both edges slightly retouched, and used as knives, borers etc. depending on the area of retouch (material in the Moravian Museum, Brno)

60:

6:18-22

The pottery from Nova Ves at Oslav, nr. Rošice, just s.w. of Brno, shows a later stage in the development of the "notenkopf" style of decoration in the Linear Pottery culture. (Červinka Rukopis, lent by kind permission of the Institute of Archaeology in Brno). The blades include long 3-5 cm. blades with very little retouch and round scrapers; also unusual examples such as a fine pointed blade and a crescent-shaped macrolith.

61:

63:1-18

In north Moravia at the site of Mohelnice, n.w. of Olomouc, the pottery shows various phases of the Linear Pottery culture, including the earliest phase, as at Žopy. (Tichý, 1962, 270-277). The flint blade industry includes a series of well-made long blades, 4-5 cm. long with shallow retouching down one or both edges; no glossy area is illustrated. Among these however are two or three blades shaped into a long narrow borer at one end, with a square cross-section; the nearest analogy for these is in the late Palaeolithic "Magdalenian" industry of Czechoslovakia, as seen especially in the low hills of south Moravia. There are also one or two microlithic trapezes found in the same pit as the above-mentioned "Magdalenian" points and the typical neolithic blades. This of course offers conclusive proof for some not only of a mesolithic, but also an Upper Palaeolithic survival in the neolithic blade industry. (Tichý, 1962, 268-269). The latter is inconceivable, for one type of implement as distinctive as this, to represent a continuing tradition for at least 9000 years, with no intermediary examples. The sporadic "Magdalenian" borers found in early Linear Pottery sites, especially where the earlier phases occur, such as Mohelnice and Bylany in Bohemia, are much more likely to represent the re-use of Palaeolithic implements or the completely independent /

independent manufacture of neolithic implements to perform a special function which caused them to accidentally resemble the palaeolithic examples.

61:19-37

On the upper Oder valley in the very north of Moravia, on the Polish border, where the Oder has made a gap in the mountains, there is an important series of sites of the middle phase of the Linear Pottery culture, centred on the town of Opava. These sites testify to the original route of expansion of the early agriculturalists into south Poland from north Moravia; for in Poland the sites of the Linear Pottery culture are distributed on the Upper Oder and thence along the Upper Vistula river.

Many of the blades, especially those with a glossy area, are below 3 cm. in length, but there are none of the distinctive microlithic blades with steep retouching down one side which are so typical of the S. Polish mesolithic industry, except perhaps one pointed blade from Opava (Konty). Long 3-5 cm. blades with the bulb retained and retouching down one or both sides also occur with the small sickle flints; obsidian blades also appear. (Material in Opava Museum and the branch of the Institute of Archaeology in Opava).

In Bohemia (West Czechoslovakia) the dense settlement by the early agriculturalists follows the loess deposits, in the upper Elbe basin. A detailed analysis of the blade industry of the most important site of the Linear Pottery culture at Bylany near Kutna Hora in east Bohemia, was made and will accompany this study as an appendix. The site represents at least 14 different phases of the Linear Pottery culture, and has been excavated /

excavated systematically for the last 12 years so that it is possible to tell exactly from which pits the blades came from and with which pottery they were associated; in this way any internal evolution of the blade industry of the Linear Pottery culture in Bohemia will be clear. (Soudský, 1960, 5-36; 1962, 190-200).

Together with an analysis of the blade implements from Močovice nr. Časlav in east Bohemia etc. the Bohemian blade industry seems very similar to that of the Moravian settlements, with a predominance of blades 4-6 cm. long, but with "sickle-gloss" occurring mostly on blades shorter than 3.5 cm. The bulb of percussion is retained on nearly all the longer blades, but not so commonly on the shorter "sickle-blades". There are no true microliths from any of the Bohemian Linear Pottery sites, although points with steep retouching on the edges, and with some surface retouching do occasionally occur at Bylaný and Močovice. The blade industry is, however, rather richer in Bohemia than in Moravia, although in both areas the main working-tools are again the polished stone axe/adzes. (Vencl., 1960).

Saxony and Thuringia (S.E. Germany) is an important centre of the Linear Pottery culture, including the earlier phases. (Quitta, 1960, 1-38, 153-188; 1962, 87-107) Hoffmann 1963). On a basis of the blade industry from the settlements of Dorna, reg. Gera, which has pottery mostly from the older and younger phases of the Linear Pottery Culture and Nerkewitz, reg. Jena, which has pottery mostly from the earlier phase, Behm-Blancke has classified the blades with a glossy area on them into four groups, in order to see if there was more than one way of hafting the blades into the sickle handles or of cutting the cereal stalks (Behm-Blancke, /

62:

63, 70

63 64

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Blancke, 1963, 107-108):

64:15-16 Group A: Blades hafted diagonally into the handle; the hafted end was either unworked, or only roughly retouched; often the bulb of percussion was incorporated in the hafted end, and much more rarely it was on the cutting end; the cutting end was either roughly retouched or unworked, or more rarely finely retouched; the glossy area is diagonally across the right-hand cutting corner.

Group B: similar, but the cutting end is rounded or obliquely angled; the cutting end and hafted end is more often finely retouched the bulb of percussion never occurs on the cutting end, but is often incorporated in the hafted end.

Group C: short, broad blades, with a rounded or straight cutting edge which is often finely retouched; the bulb of percussion is always incorporated in the hafted end; the "sickle-gloss" again covers an oblique area across one corner.

Group D: similar narrow blades to A and B but which were hafted with the long edge parallel to the handle, so that the glossy area is in a band parallel to the cutting edge; the bulb was often incorporated in one of the non-hafted ends, the other end being roughly retouched.

Groups A - C more rarely had an oblique glossy area on the left-hand cutting corner for left-handed users. These four groups, except for the rare Group D, may be found not only among the blades with sickle gloss in the Bohemian Linear Pottery settlements, but also among those of the W. German and Dutch and Belgian settlements, even though there was a mesolithic element in these latter industries.

Microolithic / (ch)

Microlithic elements are as unusual in E. Germany as they are in Czechoslovakia, although one or two geometric examples do occur, such as at the late Linear Pottery settlement, of Zwenkau (Harth), nr. Leipzig (Feustel, 1957, 46-47; Quitta, 1958, 177-179).

Carbon 14 dates from the early Linear Pottery settlements confirm that the loess deposits of Hungary, Austria, Czechoslovakia and South E. Germany were settled by agriculturalists from c. 4500-4000 c., that is in a period contemporary with the late pollen zone VIIa (Atlantic), at a time when the regions peripheral to the loess were settled with varying degrees of density by a hunting/fishing mesolithic population;

#### E. Hungary

Tarnabod	4330 $\pm$ 100 b.c. Bln 123	( <u>Radiocarbon VI</u> , 1964, 316)
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#### W. Hungary

Zalavár	4230 $\pm$ 100 b.c. Bln 87	( <u>Radiocarbon VI</u> , 1964, 316)
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#### Moravia, C.Czechoslovakia

Mohelnice	4395 $\pm$ 100 b.c. Bln 102	( <u>Radiocarbon VI</u> , 1964, 315)
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Žopy	4480 $\pm$ 100 b.c. Bln 57	( <u>Radiocarbon VI</u> , 1964, 315)
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#### N.E. Austria (all middle Linear Pottery culture)

Mold	4040 $\pm$ 160 b.c. Bln 58	( <u>Radiocarbon VI</u> , 1964, 313)
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Pulkau	4265 $\pm$ 100 b.c. Bln 83	( <u>Radiocarbon VI</u> , 1964, 313)
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Winden am See	3990 $\pm$ 100 b.c. Bln 55	
	3870 $\pm$ 100 b.c. Bln 107	( <u>Radiocarbon VI</u> , 1964, 314)

#### Saxony and Thuringia, E. Germany

<u>Zwenkau (Harth)</u>	4210 $\pm$ 100 b.c. GRN 1581	( <u>Radiocarbon V</u> , 1963, 184)
	4050 /	

4050  $\pm$  115 b.c. H 224/223  
 3950  $\pm$  100 b.c. Bln 66 (Radiocarbon VI  
 1964, 313)

Westeregeln 4190  $\pm$  100 b.c. Bln 92  
 4250  $\pm$  200 b.c. GRN 223 (Radiocarbon VI  
 1964, 313)

c) The Western part of continental temperate Europe, including the upper Danube and Rhine valleys and the lower Rhine valley was comparatively densely populated during the Lake Boreal/Atlantic period (Pollen zones VI/VIIa) by a hunting/fishing population with a geometric microlithic blade industry. In the expansion of the agriculturalists represented by the Later Linear Pottery culture, which by pollen analysis and Carbon 14 dating was in the later Atlantic period (zone VI<sup>+</sup>a), c.4000 b.c., there was a certain amount of contact and acculturation between the two populations. Without a detailed analysis of the Linear Pottery culture blade industry of this region, it is impossible to come to any exact conclusions concerning the degree of contact in each area. However, after a superficial examination of the flint industry from some of the sites, it is possible to make some general remarks about the degree of acculturation.

In Bavaria, where the mesolithic flint industry of such sites as Ensdorf, was essentially a geometric microlithic one, the scattered settlements of the later Linear Pottery culture along the Danube, such as Alburg (Lerchenheid Stadtpark) show no geometric or microlithic elements in their flint blade industry. (Zotz, 1941, 10). The blades consist of 3-5 cm. long blades with retouching on one or both edges; there is a possible example of a blunted back blade, and a "Magdalenian" point.

On the other hand, in N. Austria at the later Linear Pottery settlement /

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59:1-11  
ment of Etzmannsdorf, lower down the Danube nr. Straning, the blade industry is predominantly microlithic including some trapezes, with some of the typical Linear Pottery blades; this site is 3 km. away from the mesolithic site of Limberg where microlithic triangles, blunted back blades, but not trapezes, occur (Gulder, 1953, 29-30). Trapezes, however, do occur on other Austrian mesolithic sites, such as the late mesolithic site of Bisamberg near Vienna (Gulder, 1953, 24-25).

The upper Danube valley, that is Baden-Wurttemberg, does not seem to have been settled systematically by the Linear Pottery agricultural population; this is more likely to be because of the lack of suitable loess deposits, than because of the relatively dense mesolithic population which has been proved by evidence at Birsmatten in N. Switzerland to have been in existence in this region c. 4000 b.c. (see above).

However, there is sporadic evidence for agricultural settlement, such as the recently excavated site of Lauterach, reg. Ehingen, 20 km. north of the Federsee. (Taute, 1964). This stratified site shows a lower layer with a microlithic blade industry but no trapezes which occur only in the latest mesolithic layers at Birsmatten and Weilersteusslingen; above this was a layer with sherds of the later Linear Pottery culture as is seen in the earliest settlement of Köln-Lindenthal (Buttler and Haberey, 1936). The flint industry is much poorer than the previous layer, and consists of scrapers and blades with irregular retouching on one or both edges; there is no mention of microliths; nor however is there any mention of direct evidence for agriculture, but rather for a dominance of fishing in the economy. Above this was a layer of a middle neolithic culture similar to that of Aichbühl which is seen in a large number /



number of sites in this S.W. German area, especially round the Federsee (Reinerth, 1936).

On the loess deposits of the lower and middle Rhine valley, the Linear Pottery settlement was much denser, especially centred in the Köln area, in the Hesse region of North west Germany. Here, for example, the first important excavation of a Linear Pottery settlement took place at Köln (Lindenthal). The blade implements from the site include long blades, up to 10 cm. long with retouch on one or both edges, often forming a point at one end; two features which are new to the Linear Pottery inventory appeared on this site: large discoid scrapers and triangular arrowheads. (Buttler and Haberey, 1936, ).

However, a much better example of the rich flint blade inventory of the N.W. German Linear Pottery settlements is the recently excavated site of Müddersheim, also on a loess terrace of the Rhine at Köln, and with pottery from the same middle phase of the Linear Pottery culture as at Köln (Lindenthal). (Schietzel, 1965). In the very systematic excavation, the exact location of every blade and polished stone implement has been recorded, as at Bylany (Schietzel, 1965, 45-65). The full inventory of the Linear Pottery culture flint industry as in Czechoslovakia appears at Müddersheim, including 28 blades with retouch on one edge, 126 end scrapers, and 31 borer points some with retouch on both edges and some resembling the "Magdalenian points" of the Czech linear Pottery sites; there are also 55 blades with "sickle-gloss", the majority with an average length of 4-6 cm. as in Bohemia; there are also crescent-shaped and wide sickle blades which do not occur in Bohemia, but do occur in the Low Countries Linear Pottery settlements (see below). There are 24 polished stone axe/adzes, 6 of which are the wide trapezoid type with a flat rectangular /

angular cross-section, and 18 are the true "shoe-last" axe adzes, narrower longer and more rectangular, with a plano-convex cross-section with a high back.

As mentioned above, the two really new features in this inventory are the 9 large discoid scrapers and the 37 arrowheads; the arrowheads are symmetrical and asymmetrical triangles with an average length of 3 cm. Most are retouched only along the edges, but 4 examples have retouching on the surface; there are 6 examples of true microlithic points, 1 example of a trapeze, and 1 example of a transverse arrowhead; similar examples occur on the Mesolithic settlements of Holland, Belgium and N.W. Germany, but these Neolithic arrowheads seem to be a development and enlargement from the possible prototypes. They and the large discoid scrapers and the relatively scarce occurrence of axe/adzes must represent some new features in the basic economy of these settlements, compared with the predominance of agriculture in the economy of the Czechoslovak and Hungarian and E. German sites.

In passing, we might remark on the evidence of the animal bone material from Müddersheim (Schietzel, 1965, 115-123). Bones from wild animals, especially aurochs, and to a certain extent wild pig and wild horse, make up 28.8% of the bone material and 46% of the total number of individual animals; bones from domestic animals, especially domestic cattle and pig and to a certain extent sheep/goat make up 71% of the bone material, and 53% of the total number of individual animals. Thus only half the number of individual animals are domestic, as opposed to almost all in the Czech sites; this, in itself, would indicate a difference in economy. Besides this, only 66.7% of the domestic animals are /

are cattle (analysis unpublished by Clason of Groningen).

67 A similar situation with a change in the basic economy and the occurrence of new features, especially arrowheads, is met with in the Linear Pottery settlements of Holland and Belgium with the so-called Omalian industry (de Laet, 1958, 60). The flint blade industry from such sites as Sittard, Geleen and Elsloo in Dutch Limbourg is even richer than that of N.W. Germany (Böhmers and Bruijn, 1958-2959, 183-211).

The industry consists of basically the same types of implements as at Müddersheim, including symmetrical and asymmetrical triangular arrowheads and large round discoid scrapers; there were large numbers of wide end scrapers, and blades retouched on both edges to form a boring point at one end. The blades with "sickle-gloss" had an average length of 5-7 cm., and width of 2 cm., that is larger than either the N.W. German or central European Linear pottery culture examples. Also the glossy area is at a much shallower angle to the cutting edge of the blade, and often runs down the whole edge. As in N.W. Germany, the rectangular narrow "shoe-last" axe/adzes with thick plano-convex cross-section were much more frequent than the flat type, but even they were not very numerous.

A similar flint industry occurs on the Linear Pottery culture settlements centred round Belgium, for example at Hesbaye. (Barrière, 1954, 245).

Although the form of the arrowheads, and some of the borers and end-scrapers may have their prototypes in the "Tardenoisian" industry of the Low Countries, those of the Linear Pottery culture are quite distinct from the Mesolithic implements, and not at all microlithic. It would seem /

seem that the occurrence of geometric blades in the Linear Pottery blade industry of the Low Countries and N.W. Germany does not represent an acculturation by the local Mesolithic population so much as cultural borrowing and slight adaptation by the intrusive agricultural population.

As has been mentioned above, the Carbon 14 and pollen analysis from the mesolithic and Linear Pottery culture site of this region would indicate that the two populations were partly contemporary, but with a different distribution:

Bavaria (W. Germany)

Wittislingen 4080  $\pm$  110 b.c. GRN 265 (Milojčić, 1958, 414)

Holland

Elsloo

Gelre

4245  $\pm$  170 b.c. GRN 423

Sittard

3835  $\pm$  210 b.c. GRN 422

(Science 127, 1958, 13)

d) As mentioned above, the Linear Pottery settlements in Poland represent an expansion of the agricultural colonists from N.E. Moravia, via the gap in the mountains at Opava/Ostrava made by the upper Oder river. The settlements are distributed along the courses of the Upper Oder, and especially along the Upper Vistula in the region of Krakow. (Jazdzewski, 1965, 60-68; Kulczycka, 1964; Kozlowski, 1961). The pottery from the settlements represents the middle phase of the Linear Pottery culture, being decorated especially by the "notenkopf" style of decoration; it is associated with a mixed flint blade industry, consisting predominantly of long blades with an average length of 3.5-5 cm., retouched down one edge, or very rarely down both edges, and sometimes at one end; it is assumed that these were used as sickle flints, but without examination for working-traces it is impossible to prove it; there are also large numbers of wide end scrapers /



scrapers which appear as a large percentage of the whole inventory, similar to the Dutch linear pottery settlements; for instance at Olzanica 5 out of the 10 flint blade working-implements are of this type. Long borer points, similar to those from N. Germany and Holland, and the "Magdalenian" points of the Czechoslovak sites occur, but very rarely, as at Olzanica (Kozłowski and Kulczycka, 1961, ) and Sandomierz (Krakowka) (Burchard, 1960, 5-9).

Microlithic elements in the Linear Pottery flint industry of South Poland are completely absent; trapezes and blunted back blades which are typical of the south Polish mesolithic sites do not occur except for a possible long blunted back blade from Olzanica.

In the sporadic Linear Pottery settlements of Central Poland, however, such as Cheximza, features which may indicate contact with the local Mesolithic population do occur, including transverse arrowheads and blunted back blades (Jażdżewski, 1965, 67; Maciejewski, 1962, ) But the examples are so isolated that it is impossible to make any conclusive statements of the degree of contact or acculturation.

Polished stone implements of the south Polish Linear Pottery sites consisted especially of the longer rectangular axe/adzes of the true "shoe-last" type with a high back, and thick plano-convex cross-section, like the example from Trzebieszawice (Burchard, 1959, 13-22), which is identical to examples from the Moravian sites of the middle phase of the Linear Pottery culture; the Polish axe/adzes are also assumed to have been the main working tool of the early agriculturalists (Jażdżewski, 1965, 62).

In /

In the U.S.S.R. the Linear Pottery culture settlements are concentrated on the middle and upper course of the river Dniester in the Ukraine S.S.R. The settlement highest up the Dniester is Kotovane, near the watershed between the Dniester and the river San, which, although it has no Linear Pottery settlements along it, is a tributary of the upper Vistula in south-east Poland. (Passek and Chernush, 1963, 6). It is obvious from the similarity of the "notenkopf" decoration of the Ukraine sites, especially those of the upper Dniester, to that of the south Polish sites, that the route of expansion of the early agriculturalists represented by the middle phase of the Linear Pottery culture was from the upper Vistula, and down the Dniester river.

On a basis of the stone material from the lowest layer at Floresti on the river Reut, in the north Moldavian S.S.R. (Passek, 1962, 133-1958, 33; Passek and Chernush, 1963, 22-30) Torskoye, on the upper Dniester river (Passek and Chernush, 1963, 21-22), and the lowest layer at Nezviska, on the upper Dniester, near Torskoye (Chernush, 1956, 46-56; 1962, 11-26; Passek and Chernush, 1963, 14-20), it is possible to see that the industry is the intrusive one usually associated with pottery of the Linear Pottery culture. The polished stone axe/adzes are very rarely of the flat trapezoid type; the majority are long, narrow and quite rectangular often with a triangular or almost square cross-profile, and sometimes even rounded.

The blade industry consists mostly of long 4-6 cm. blades, with very little retouching, only on part of one side or at one end, usually the part furthest away from the retained bulb of percussion. The majority of /

of scrapers are small wide end-scrapers, although one or two large rounded examples do occur.

There are three or four examples of possible geometric microlithic blades from Florești, with analogies in the N.W. Ukraine mesolithic sites e.g. Kudlayevka (see above); two might be interpreted as triangular arrowheads and two as transverse arrowheads, although it is also possible that the latter two were used as composite blades.

From the Dniester Basin, the early agriculturalists represented by the Linear Pottery culture expanded westwards to the Prut and Seret valleys of N.E. Rumania and even penetrated the upper Olt and Mureș rivers of Central Rumania, thus almost completing a full circle of expansion, from the Alföldi in E. Hungary where the culture is seen in its earliest phase round the northern edge of the Carpathians and back across to the south-western edge of the Carpathians to Transilvania, where the culture is seen in its latest stage. (Comșa, 1959a, 35-57; 1960, 217-242, Vlassa, 1959, 239-245).

The Linear Pottery culture in Moldavia has much the same distribution as the preceding Cris culture. For instance, at Perieni, the Linear Pottery settlement is stratified directly above the Cris settlement (Petrescu-Dîmbovița, 1957, 65-82), and at Glăvănești Vechi (Comșa, 1959a, 44); (Nestor, 1951, 53-57) the settlements belonging to the two cultures are very near. In Moldavia, therefore, the Linear Pottery culture does not always represent the earliest agriculturalists, so that the flint and polished stone industry is not so important to this study in that respect. However, it is interesting to note that, although there are the same long 4-7 cm. blades as in the Cris blade industry, these have much less regular retouching down the /

the edges and are not nearly as numerous as in the Criș culture.

77  
681, 27-29  
68:2-6  
11-12

Of at least 40 blades examined from Glăvănești Vechi, only 4 were long blades over 3.5 cm. , and of these only 1 has "sickle gloss" across one corner. At least 14 are end scrapers 2.5-4 cm. long and 2-3 cm. wide, similar those from the Ukraine sites; discoid scrapers like those from the Dutch sites occur, but very rarely. There are only three or four short blades with retouching down one or both sides which could be interpreted as "sickle-blades", although they show no working traces of this, function.

68: 18-25

It is also interesting to note the occurrence of geometric microliths such as trapezes and triangles on the Moldavian sites; for example at Glăvănești Vechi there are at least 4 microlithic trapezes, and 3 microlithic triangles (material at the Institute of Archaeology, București). The nearest analogies for these microlithic implements are the mesolithic industries of Ceahlău (Dîrțu) on the eastern edge of the Carpathian mountains and Kudlayevka in the N.W. Ukraine, neither of which are a very great distance from the Moldavian Linear Pottery sites. It is difficult to tell, however, whether the neolithic microlithic blades represent actual cultural borrowing and contact between the agricultural and hunting/fishing populations or whether they represent a slight change in the economy of the settlements of the Linear Pottery culture in this region, with an increasing importance in light hunting, just as in the Linear Pottery settlements of N.W. Germany where there was a similar occurrence of arrowheads and discoid scrapers (see above).

The polished stone axe/adzes are nearly all long, narrow and rectangular with high backs and a square or rounded cross-section. Comșa compares the animal bone evidence of Glăvănești Vechi with that from/



from Florești (Passek, 1958, 44) in the Ukraine where there are bones from at least 34 individuals of which 7 are domesticated animals including 10 cattle, 5 pig and 2 sheep/goat. As in N.W. Germany, the basic economy of the Ukraine and Rumanian sites appears to be rather different from that of the Czechoslovak and Hungarian Linear Pottery sites, with the number of domestic and wild animals equal. (Comşa, 1959a, 47).

c) Summary

From this rather selective analysis of the flint blade and polished stone material of the late mesolithic and early neolithic settlements of west Asia, south-east Europe and temperate Europe, it is possible to draw several general conclusions:

1) In western Asia, the settlements associated with possible evidence of incipient agriculture and called Proto-neolithic have produced microlithic industries, often including geometric forms. e.g. Karim Shahr in N. Iraq, Jericho "Natufian" and "PPNA". A similar industry may be seen in Greece also connected with possible incipient agriculture e.g. basal layer at Argissa in Thessaly. Approximate date 9000 - 7500 b.c.

2) In south-east Europe north of Greece, there are similar microlithic blade industries, especially in mountain districts and dunes e.g. Crvena Stijena IV in Montenegro, Yugoslavia, Beloslav (Gebedže) in E. Bulgaria, Ceahlău (Dîrțu) and Băile Herculane (Peștera Hoților) in Rumania. These sites have been claimed as "pre-pottery neolithic", as at Argissa; there is evidence for intensified collecting and light hunting, but there is no valid evidence for incipient agriculture or domestication of animals from any of the sites. There is no evidence for absolute dating, and some of /

of the industries e.g. Ceahlău may even continue contemporary with the neolithic Criș culture but on its periphery. (aceraio) c.7000 6700 b.c.

3) In Temperate Europe, especially the western and northern part, settlements of a hunting/fishing population with a microlithic blade industry, with a predominant use of trapezes in its latest phases, is distributed on low sandy hills and dunes. It is possible to recognise various local groups:

- a) Iberia, S. France
- b) N.E. France, Low Countries
- c) North Switzerland, S.W. Germany (Baden-Wurtemberg and Bavaria), S.W. Czechoslovakia, N. Austria.

d) N.W. Germany, part of the Low Countries

6) The same blade and polished stone industry expands with the agricultural economy and appears on sites of the Linear Pottery cultures E. Germany, S. Poland, upper Dniester and upper Dnieper. (N.W. Ukraine) on the loess deposits of Hungary and Czechoslovakia and southern E. Germany c. 4600-4000 b.c. As the Linear Pottery culture evolved in this area there was very little change in the blade or polished stone industry except that the "shoe-last" axe/adzes with high backs predominated in the later phases; there is no evidence of incipient agriculture, except from sites which have been proved by pollen analysis or Carbon 14 dating to be later or contemporary

7) In the settlements of the middle phase of the Linear Pottery culture in N.W. Germany and Holland, the blade and polished stone industry was basically the same, just as the economy was still basically agricultural; in which trapeze forms become important is dated by pollen analysis and Carbon 14 to c. 3400 b.c. The date of the microlithic industries connected with a hunting/fishing population must date c. 7000-3500 b.c. in Temperate Europe. slight change in the economy is also evident in an increase in the

importance of hunting (or at least in the killing of wild animals especially

4) The earliest productive agricultural communities of west Asia (aurochs) and a lesser predominance of cattle with a growing importance of are associated with a macrolithic blade industry in which small sickle-blades are /

are evident, and with a polished stone industry, especially trapezoid flat axe/adzes e.g. Jericho (PPNB) and Hacilar (aceramic) c.7000 6700 b.c.

This industry evolves with the developed agricultural economy. 4000- and the appearance of monochrome and then painted pottery e.g. Çatal Hüyük, Hacilar, Hassuna, etc. c. 6000-5000 b.c.

5) The macrolithic blade and polished stone industry appears with direct evidence for an agricultural economy and monochrome and then painted pottery in Greece, Bulgaria, and E. Yugoslavia in sites of the Proto-Sesklo, Karanovo I, and Starčevo cultures c. 5000-4500 b.c. and expands as the Cris Körös culture to S.E. Hungary and Rumania.

6) The same blade and polished stone industry expands with the agricultural economy and appears on sites of the Linear Pottery cultures on the loess deposits of Hungary and Czechoslovakia and southern E. Germany c. 4600-4000 b.c. As the Linear Pottery culture evolved in this area there was very little change in the blade or polished stone industry except that the "shoe-last" axe/adzes with high backs predominated in the later phases; there was no visible contact with any peripheral mesolithic population.

7) In the settlements of the middle phase of the Linear Pottery latest phase of the Linear Pottery cultures from the Ukraine. The blade culture in N.W. Germany and Holland, the blade and polished stone industry and polished stone industry is rather different from that of the preceding was basically the same, just as the economy was still basically agricultural; Cris culture in this area, with the comparative rarity of "sickle-blades" and however, it is possible to see definite new features such as triangular arrow-frequent occurrence of wide end-scrapers, geometric microliths, and sometimes heads and discoid scrapers, and the importance of wide end-scrapers; a discoid scrapers. This industry is associated with an economy similar to slight change in the economy is also evident in an increase in the that of the Ukraine Linear Pottery sites. importance of hunting (or at least in the killing of wild animals especially aurochs) and a lesser predominance of cattle with a growing importance of domestic /



domestic pig, than in Czechoslovakia. This may be interpreted as acculturation by the local hunting/fishing population, but is more likely to represent further adaptation by the intrusive agriculturalists. c. 4000-3800 b.c.

8) An expansion of the agriculturalists represented by the middle phase of the Linear Pottery culture from Moravia (Central Czechoslovakia) to south Poland took place at the same time as that from west Czechoslovakia and southern E. Germany to N.W. Germany and Holland. There is very little difference in the blade and polished stone industries of south Poland and Moravia, except that in Poland there are large numbers of wide end-scrapers as in N.W. Germany. From Poland the culture expanded to the Ukraine where there was further adaptation by the appearance of sporadic microlithic geometric blades which might be interpreted as arrowheads, and again a high frequency of the wide end-scrapers. Associated with this is a change in the economy from that of the Czech sites to one similar to that of the N.W. German sites with an increase in hunting and the importance of domesticated pigs, although domesticated cattle still predominated. A similar situation occurs in E. Rumania where the sites represent a further expansion of the latest phase of the Linear Pottery cultures from the Ukraine. The blade and polished stone industry is rather different from that of the preceding Cris culture in this area, with the comparative rarity of "sickle-blades" and frequent occurrence of wide end-scrapers, geometric microliths, and sometimes discoid scrapers. This industry is associated with an economy similar to that of the Ukraine Linear Pottery sites.



Archaeological Evidence for the early domestication of animals and  
Cultivation of plants in South-West Asia and South-East and Central  
Europe

The process of the initial domestication of animals and cultivation of plants, the wild ancestors and the various domestic descendants have been discussed in detail by many specialists (Zeuner, 1954, 327-375; 1963; Helbaek, 1959, 365-372; 1960, 99-118; Reed, 1960, 119-146; etc.) In this chapter, therefore, it will only be necessary to summarise the archaeological evidence for early agriculture in south-west Asia and south-east Europe, and to discuss this in relation to a study of the basic economy of the communities represented by the Linear Pottery cultures.

1) The early cultivation of cereal crops

a) wheat: the wild ancestor of domestic wheat is of two sub-species:

Triticum Aegilopoides with a distribution in W.Iran, Asia Minor, Greece and south Yugoslavia, Armenia and Georgia.

Triticum Dicoccoides with a distribution in W. Iran, Syria, N. Palestine, N.E. Turkey, Armenia.

From these, two sub-species of cultivated wheat were developed:

From T. Aegilopoides evolved T. Monococcum (Einkorn) which is found at Jarmo, and many early neolithic sites in south-east Europe and Central Europe. It was never cultivated as a separate crop, and was only rarely the dominant wheat crop (on only one site, Mohelnice, of the Linear Pottery culture). In modern times it is grown on thin hilly soils and produces a low yield.

From T. Dicoccoides evolved T. Dicoccum (emmer), which also occurred at Jarmo; it is the dominant wheat crop of the central European early neolithic /

neolithic settlements and most of the early agricultural settlements of south-east Europe, south-west Asia, N. Iran, Georgia, Armenia, C. Asia, India. Emmer wheat has a clinging hull so that it is difficult to extract the kernel for milling into flour; however the outside skin can be removed by heating and parching the grains in covered ovens; this type of low wide oven is found on many early neolithic sites including Jarmo. Jericho PPNB and sites of the Karanovo I, Starčevo, Körös/Criş and Linear Pottery cultures. The prehistoric uses of cereal grain are unlikely to have included true bread; it was much more likely to have been made into a rough gruel or porridge which when allowed, for forced, to stand became fermented into a type of thick beer. (Herlaek, 1960, 100-107; Mangelsdorf, 1953, 2-6).

b) Barley: there are two sub-species of wild barley whose distribution pattern is almost the same as that of the wild wheats, but rather wider:

Hordeum Spontaneum (two-row barley), with an almost identical distribution to *T. Aegilopoides* and *dicoccoides*, but extending further east and not occurring in Europe.

Hordeum Agriocrithon (six-row barley), occurring in central Asia as well as west Asia.

From *H. Spontaneum* the domestic barley evolved was H. Distichum which is found on all the early agricultural sites of S.W. Asia which have produced grains of cultivated wheat e.g. Jarmo; its cultivation probably began as a secondary crop which always occurred in association with wheat; it can only very rarely have been cultivated by itself;

H. Hexastichum (domesticated six-row barley): it is still unclear which wild species is the ancestor of this cultivated species; *H. Agriocrithon* /

H. *Agriocrithon* is mainly distributed in Central Asia, and its occurrence in West Asia is disputed. It seems more likely that this sub-species is a lowland development from the upland two-row barley, since it appears especially on the sites of the Halaf culture, and the early neolithic sites of south-east and Central Europe. (Helbaek, 1960, 107-112).

## 2) The early domestication of animals

a) Goat: after the domestication of the dog, it seems from the archaeological evidence that the goat was the next animal to be domesticated. Among animal bones from early neolithic sites of south-west Asia and south-east Europe, however, it is very difficult to distinguish between those of domesticated sheep and goat, and even these are difficult to distinguish in some bones from wild sheep and goat or even wild ibex or gazelle.

Capra hircus aegagrus (bezoar) is the wild ancestor of domestic goat, and is distinguished especially by its "scimitar" shaped horns; it is distributed in south-west Asia; it may possibly have occurred rarely in Greece and the Balkans, as an extension of its normal territory, but it certainly never occurred in central Europe which was inhabited by the ibex which was never domesticated.

In Pleistocene Europe, there is evidence for a wild goat with screw horns, known as *Capra Prisca*, but this cannot be responsible for the domesticated goat in Europe.

Capra Hircus is the general name for domesticated goats, all of which must be descended from *C.h.aegagrus*, for these are also distinguished by their scimitar-shaped horns. The earliest evidence for the domestication of /

of goats occurs at Jarmo, where transitional forms also appear, and at Jericho PPNA (Reed, 1960, 129-134). Goats are destructive animals, and must have been quite effective in clearing the open forests of south-west Asia and south-east Europe, where, on the early neolithic sites, they appear as one of the most important domesticated animals; apart from this function, their hair, meat and milk must have been of secondary importance especially as the standard of living and agricultural production of the settled communities increased. Goats are of primary importance only to a population living in hilly or rough country, or where meat and milk cannot be obtained from any other source. (Zeuner, 1963, 146-152).

b) Sheep: definite archaeological evidence for the domestication of sheep occurs much later than that for the domestication of goats. There are 4 main species of wild sheep:

Ovis musimon (European mouflon) now distributed in Sardinia and Corsica, and introduced successfully to the open forests of central Europe.

Ovis orientalis (Asiatic mouflon) distributed in Cyprus and south-west Asia. This species was found at Jarmo, and Jericho PPNA and PPNB but there is no evidence that it was domesticated.

Ovis vignei (Urial) was and is distributed on the mountains and undulating hills and even open woodland plains of E. Iran and Turkestan.

Ovis ammon (Argali) is distributed in central Asia, and was probably the progenitor of the central Asian domestic sheep.

Ovis aries is the general term for the domesticated sheep. It is still uncertain where the earliest evidence for the domestication of sheep occurs; if it is in south-West Asia, it is likely to be from the Asiatic mouflon. The earliest definite evidence in the Near East, however, is in Egypt /



Egypt c. 3500 b.c., although there is possible evidence from the sites of the Hassuna and Halaf cultures (Reed, 1960, 134-138). Zeuner, however, regards the sheep which were brought to south-east and central Europe by the earliest agriculturalists as descended from the Urial sheep (Zeuner, 1963, 159).

There is no evidence for wild sheep in post-glacial continental Europe, but sheep have been reported from various pre-neolithic sites in south-east Europe and west Europe, with the interpretation of pre-pottery neolithic cultures with domesticated sheep. These sites include La Adam, Dobrudza, E. Rumania (Radulesco and Samson, 1962, 282-320), Băile Herculane, Oltenia, S.W. Rumania, (Nicolaescu-Plopşor, 1958, 393-399; Berciu, 1960c, 15-29) and Murzak Koba, Crimea, S.W. Ukraine (Gromov, ) in south-east Europe and Teviec in Brittany, N.W. France, Cuzoul de Gramat and Sauveterre in E. France (Zeuner, 1963; 193). However, as mentioned in the previous chapter, these possible examples of domesticated sheep are either associated with trapezoid/microlithic flint blade industries which are not necessarily earlier than the early agricultural colonists from the south-east represented by the Starcevo, Cris, Linear Pottery cultures etc. in which there is ample evidence for domesticated sheep, as at Murzak Koba, the sheep have subsequently been proved to be wild.

c) Cattle: the wild ancestor of domesticated cattle was distributed in the open forests of Temperate Europe, S.W. Asia and north Africa, and is known as Bos Primigenius (Aurochs). Evidence for the domesticated descendant Bos Taurus appears much later than that for goat. At Jarmo and Çatal Hüyük, the cattle bones are definitely from the wild species. In the sites of the Hassuna culture there is possible evidence for domesticated cattle; in the /

the economy of the Halaf culture, cattle were certainly important, but it has not been proved yet what proportion of these was domesticated (Reed, 1960, 141-145).

Cattle which show definite signs of domestication become increasingly important in the early agricultural settlements north of the Danube. Among the domesticated cattle of these settlements there is a type known as Bos Longifrons/brachyceros, which was a much smaller, weaker animal with shorter horns than other examples of domesticated cattle. There is still a dispute as to whether this was a domesticated descendant of a smaller sub-species of Bos Primigenius, or whether it was a deliberate development of a smaller docile breed of domestic cattle. Since it appears in the earliest neolithic settlements of south-east and central Europe, if it does represent a separate breed, the breeding is likely to have taken place outside Europe. What is much more likely, however, is that Bos longifrons represents cattle in the first few generations of domestication, when, through ignorance or carelessness, rather than a deliberate policy, the animals were kept close to starvation and without exercise etc. (Zeuner, 1963, 201-244).

d) Pig; the wild form of the pig, Sus scrofa Ferus, has a similar wide distribution in the marshes, deciduous forests, plains and mountains of Europe and Asia. The pig is one of the easiest animals to domesticate, if caught young, and will adapt to any circumstances or living conditions or food. Thus it is likely to have been domesticated independantly in many different places, especially by the more settled agricultural communities (Reed, 1960, 138-141). Pigs appear at Jarmo, but these need not be domesticated.

However, /

However, by the late fourth millenium b.c. sus scrofa domesticus was widespread in the settlements of south-west Asia, south-east and central Europe. It was obviously kept for its meat and fat, and perhaps for keeping down undergrowth in clearings, etc. (Zeuner, 1963, 256-261).

3) The Economy of the early agricultural communities of south-east Europe.

a) Greece: on a basis particularly of Argissa Magula, and to a certain extent Arapi and Otzaki tells, it is possible to come to certain conclusions about the differences in the basic economy of the precereamic and the ceramic neolithic populations of Thessaly. (Boessneck, 1955, 2; 1962, 27-77).

In the aceramic neolithic layer of Argissa Magula, 98% of the animal bone material is from domestic animals; of these domestic animals, 85% are sheep/goats, 11% are pigs, and 8% are cattle. This layer has also produced evidence for the cultivation of *T. Monococum*, *T. Dicocum* and *H. Vulgare*.

The "early pottery" neolithic layer at Argissa has produced a similar overwhelming majority of domestic animal bones; of 29 bones, only 2 are from wild animals; among the domestic animal bones, 11 are from pigs 8 are from cattle, 7 are from sheep/goats, but perhaps this is too small a number from which to judge a community's economic basis.

In the layers at Argissa, Otzaki and Arapi which represent the fully-developed neolithic cultures in Thessaly with monochrome and then painted ware, the bones of domestic animals form approximately 98% of the animal bone material. At Argissa in the Proto-Sesklo layer, there are 3 cattle bones /

At Nea Nikomideia in Greek Macedonia, the bones of especially bones representing 2 individuals, 5 sheep/goat bones representing 2 individuals and 5 pig bones representing 1 individual; in the animal bones, and deer, hare, cattle and pigs among the wild animal bones, Proto-Sesklo layer at Arapi and Otzaki, sheep/goats form 57% of the bone material of domestic animals, cattle 34%, and pigs 9%. There is evidence for the cultivation of barley, wheat and lentils (Rodden, 1964a, 109; 196b, 564).

In the pre-Sesklo layer at Otzaki and Arapi, there are 3 wild animal bones; of the domestic bones, sheep/goats form 50% and cattle 30%, remaining the same as in the Proto-Sesklo layer; pigs however have increased to 20%.

In the Early and Middle Sesklo layers, with the development of painted pottery and a more stable economy, the percentage of domestic pig bones increases to 45% of the domestic animal bones, while sheep/goats decreased to 37% and cattle to 18%.

In the Late Sesklo layer at Arapi and Otzaki, pigs increase in importance even more to form 56% of the domestic bone material, whereas sheep/goats decrease to 19% and cattle remain comparatively constant at 25%.

The increase in the importance of the domestic pig is particularly marked in the Sesklo culture layers of the Thessalian sites, as well as the complete lack of evidence for hunting. Unfortunately, there is very little evidence which is reported in such detail from other early neolithic sites of south-east Europe, so that it cannot be stated dogmatically that the Thessalian sites are an exception to the usual pattern of economy in the early agricultural settlements of south-east Europe; but it is certainly unusual that evidence for hunting is so completely absent and that pigs become as important as sheep/goats.

At /



At Nea Nikomedea in Greek Macedonia, the bones of especially sheep and goats and some cattle and pigs are reported among the domestic animal bones, and deer, hare, cattle and pigs among the wild animal bones, but no exact numbers or proportions are given. There is also evidence for the cultivation of barley, wheat and lentils (Rodden, 1964a, 109; 196b, 564).

b) Bulgaria: very little analysis has been done on the animal bones from the layers of the tell settlements with material of the Karanovo I culture. On a basis of an analysis of the bone material from the cave-sites of Loveč (Džambazov, 1963, 236-238) and Devetaki (Mikov and Džambazov, 1960, 50), both in north central Bulgaria, it is possible to see that the economy of the early agriculturalists of the northern edge of the Balkan mountains was based equally on hunting wild animals and breeding of domestic animals.

At Devetaki, although in the analysis, material of the Karanovo I and Karanovo IV (c.f. Boian Bolintineanu) cultures is run together, it is easy to see the relative importance of red-deer hunting in the economy of both phases, by the fact that at least 70 red deer antlers have been found in this layer of the cave, whereas only 11 bones of *Bos Taurus* have been excavated. Besides domestic cattle, 6 jaw bones of domesticated pig are reported, and 5 jaw bones of sheep.

At Loveč no figures are given, but domesticated cattle, sheep and dog occurred in the neolithic levels, and among the wild animals were red deer, roe deer, pig, fox etc.

c) Yugoslavia: very little analysis of animal bone or plant remained has been made from the material of the Starčevo culture. One happy exception /

exception of this is the site of Vršnik in Macedonia, south Yugoslavia.

From the Starčevo culture layer III of this settlement 875 carbonised cereal grains were recovered. (Garašanin M. and D., 1961, 7-40). After analysis in Mainz, 480 of these were identified as *Triticum monococcum*, and 350 were *Triticum dicoccum*; 42 were a type of *T. monococcum*, and 3 were *T. aestivum*. (Hopf, 1961, 41-45). It will be remembered that south Yugoslavia is included in the extended territory of wild einkorn, so that it is even possible that this was locally domesticated wheat,

although the emmer could not have been.

In the transitional area, the site of Starčevo is mentioned as having produced a horn of a *bos primigenius* and bones of sheep/goat, as well as wild pig, deer, fish birds. (Garašanin D., 1954, 142).

The animal bones of the site of Obrež (Baštine) are still being analysed, but so far the bones of cattle especially have been identified, although it is not specified whether these are from wild or domesticated animals; there are also bones of red deer and sheep/goat (which are domesticated), and large heaps of *Unio* shells, which breed in the flood plains of slow-moving rivers, and are typical of the transitional Starčevo-Körös and Körös cultures (Brukner, 1960, 87).

d) Rumania: The animal bone material from the Criş sites of Verbița in Oltenia, S.W. Rumania, and Glăvănești Vechi in Moldavia, N.E. Rumania, is being analysed at the Institute of Comparative Anatomy in București. (Comșa, 1959c, 173-184). On both sites it is obvious that, although fishing was relatively important, hunting was almost negligible, and the basis of the economy was cultivating cereals and keeping domesticated animals.

The evidence from Glăvănești Vechi shows that domesticated cattle predominate over sheep/goats, which is an unusual feature in the economy of the early agriculturalists of south-east Europe, and may indicate a later date for the Moldavian Criș culture. There were very few pig bones among the domesticated animal bone material; there were also very few wild animal bones, although red-deer horns did occur. *Triticum Monococcum* grains also occur. (Petrescu-Dîmbovița, 1959).

The evidence from Verbița is very similar; wild animal bones are rare, although the bones of aurochs, deer, and a possible wild black goat occur; the domesticated animals include sheep/goats with long horns, small cattle (presumably of the longifrons type) with twisted horns, and pigs with a small body. There is no evidence that the increase of cattle breeding in the Criș cultures of Rumania, especially in the north-east, is an indication of breeding from local wild animals.

e) Hungary: there is a well-documented analysis of the animal bone material of the Körös site of Maroslele (Pana) by the confluence of the Maros and Tisza rivers near Szeged. (Bökönyi, 1964, 87-93). There were 89 wild animal bones including 34 fish-bones, and 3 of marsh-turtle, 27 bones of water-birds and 25 of mammals especially aurochs and roe deer. There are 181 bones of domestic animals, which thus form approximately 66% of the total number of animal bones; 71% of these are the bones of sheep/goats, including a possible hornless sheep; 26% are bones of cattle, including some which appear transitional between *Bos Taurus* and *Bos Primigenius*, which might indicate either local mixed breeding between wild and domestic animals, which was quite possible if the domestic cows were allowed to wander outside; or it might indicate supplementary domestication /



especially cattle and pigs. domestication of local *Bos Primigenius*, in addition to the domesticated breed already introduced by the expansion of the agricultural colonists from the south-east. Domesticated pig bones make up only 1% of the total number of domestic animal bones.

Again there were large midden heaps of fresh-water shells, especially *Unio* shells. There is a similar analysis of the animal bones from Bodzás (Bokoryl, 1959, 46).

The same animals occur on other Koros sites, such as Obessenyő and Tiszaug (Topart), but the number of bones is not mentioned (Kutzian, 1947, 10).

#### 4) The Economy of the early agricultural communities in Central Europe represented by the Linear pottery Cultures.

a) Hungary: Bökönyi has made a number of detailed analyses of the animal bone material from settlements of the Linear Pottery culture in Hungary (Bökönyi, 1959, 46-55; 1961, 14-23).

Unfortunately the sites of the earliest phase of the Linear Pottery culture of the Alföldi in E. Hungary were mostly excavated in the early part of this century, when very few of the bones were preserved; the recent excavations of this phase have generally been rather small or have not produced enough bone material to make an analysis worth-while (Bökönyi in discussion in the National Museum, Budapest).

The majority of sites whose animal bones have been analysed, are from the middle phase of development in the Linear Pottery cultures of Hungary, and already it is possible to see that the basic economy of the communities in this phase is quite different from that of the Koros culture settlements, with a great increase in the importance of domestic animals, especially /



especially cattle and pigs.

In south-east Hungary, during this middle phase of the culture, it expanded into the territory previously inhabited by the population with the Koros culture; these southern Linear Pottery settlements will be described in greater detail in a subsequent chapter 2 of the settlements have had their bone material analysed:

Lebő, an island in the Tisza river, nr. Szeged; in the 1956 excavation material of this phase was excavated (Trogmayer, 1957, 19-57). Of the animal bones, rather less than half are from wild animals, especially aurochs and wild pig; among the domesticated animal bones, over 90% are from cattle, very few being from pig and sheep/goat (Bökönyi, 1957, 61-78).

Hódmezővásárhely (Gorzsa), nr. Szeged. The site has produced a very similar proportion of wild animal bones to domestic bones; the most important wild animals are aurochs, red deer and wild pig. Again over 90% of the domestic animal bones are from cattle, with a very small proportion of pig and dog, and even smaller number of sheep and goat. (Gaszdapusztai, 1963, 21-46; Bökönyi, 1959, 53).

In East Hungary, in the central part of the Alföldi, the middle phase of the Linear Pottery culture is represented by 3 sites whose bone material has been analysed:

Szegvár (Tűsköves), on the R. Tisza nr. Szentés. The settlement has been excavated by Csblog, but is mostly unpublished (Csalog, 1958, 83).

The settlement is on a mound which rises above marshy ground, like so many of the settlements of the Körös culture; it is clear that the water played an important part in the economy, from the large number of turtle remains / 6 turtles (mostly the same number as from the settlement of Lebő

remains found among the material. Wild and domestic animal bones are of approximately equal proportions; the most important wild animals are again bones while the bones of pig form only 12%, and sheep/goat are completely absent. (Bökönyi, 1959, 47). animals, cattle form approximately 75%, but pig are also important.

Folyás (Szilmeg), nr. Debrecen, in the middle of the Great Hungarian Plain has produced material from the Herpály culture (Kutzian, excavated in 1950 by I.B. Kutzian (Korek, 1960, 28). A large percentage of the animal bones from this site in the middle of the Great Hungarian Plain was from domestic animals, especially cattle and pigs which occur in equal numbers in this site. Among the wild bones, aurochs formed a very small percentage, the majority of bones coming from red deer, roe deer forming about 60% of the total of domestic bones, and pig 28%, with some and wild pig (Bökönyi, 1959, 49). sheep/goats. (Bökönyi, 1959, 53-55).

Polgár (Basatanya), near Szilmeg, is famous for its Copper Age cemetery; however, a small settlement of the middle phase of the Linear Pottery culture was also excavated (Korek, 1960, 28; Kutzian, 1963). The analysis shows quite different results from that of Szilmeg: there are only 2 bones of wild animals and these are from horse; among the

domestic animal bones, over 90% are from cattle, with a very small percentage of pig and sheep/goat (Bökönyi, 1959, 49-50).

The late phase of the Linear Pottery cultures of E. Hungary, represented by the Tisza II, Herpály and Csoszhalom cultures, have 3 sites where the animal bone material has been analysed:

Lebő, nr. Szeged, the material from the 1950 excavation was predominantly from this late stage of the Linear Pottery culture (Korek, 1958, 132-155). The bones of wild animals form a higher percentage than those of domestic animals, and consist especially of Red deer, wildpig and aurochs, as well as 8 turtles (exactly the same number as from the settlement at Lebo in /

the middle phase of the Linear Pottery culture or Pre-Classical Buck in the previous phase). Cattle bones form 88% of the domestic animal culture, but also from the late phase or Classical Buck culture (Csalog, 1955, 23-44 and 227-230). There were very few animal bones from which to absent. (Bökönyi, 1959, 47).

Berettyószentmárton, nr. Debrecen, in the middle of the Great Hungarian Plain has produced material from the Herpály culture (Kutzian, 1963, 302), and was excavated by Kalicz and Kutzian in 1954-55. The

In West Hungary, the animal bone material has been analysed from bones of wild animals again form a high percentage, approximately 75% of the total, aurochs being especially important, also red deer and some group of Linear Pottery cultures:

wild pig. Among the domestic animals, cattle were the most important forming about 60% of the total of domestic bones, and pig 28%, with some sheep/goats. (Bökönyi, 1959, 53-55).

Herpály, also near Debrecen, has produced very similar results, with wild bones forming 75% of the total number of which a very high proportion are from aurochs. Among the domestic animal bones, 54% are from cattle, 24% from pig and 16% from sheep/goat. (Bökönyi, 1959, 55).

Pomáz (Zdravlyak), nr. Budapest, N.C. Hungary, was excavated in 1956 by I. B. Kutzian (Kutzian, 1958, 81). Again, 90% of the total animal bone distinguished especially by a great increase in the frequency of wild cattle (aurochs); this has been interpreted by Bokonyi as an increase in and pig occurring in equal proportions; the few wild animal bones are from the importance of stock-breeding, with a supplementary domestication by aurochs, wild pig and red deer. (Bökönyi, 1959, 52).

Thus, wild animal bones occur in equal quantities to domestic animal bones in the middle Linear Pottery culture sites of the lower and middle Budapest, April 1965.)

The eastern Group of the Linear Pottery cultures in N.E. Hungary/S.E. Slovakia is represented in this section by the settlement of Borsed (Derekegyházi Dűlő), near Miskolc, which has material predominantly from the / dominant/



the middle phase of the Linear Pottery culture or Pre-Classical Bükk culture, but also from the Late phase or Classical Bükk culture (Csalog, 1955, 23-44 and 227-230). There were very few animal bones from which to make an analysis. The majority of the bones were from domesticated animals, especially cattle, but also sheep/goats and pigs in equal numbers. (Bökönyi, 1959, 50).

In West Hungary, the animal bone material has been analysed from 2 sites with archaeological material from the middle phase of the central group of Linear Pottery cultures:

Győr (Pápai vám), N.W. Hungary, on the Danube river was excavated in 1952 and 1954 and is unpublished. The bones of domestic animals form 90% of the total bone material, the majority coming from cattle, with some sheep/goats and pigs in equal proportions. The majority of wild animal bones comes from aurochs, but these are in much smaller numbers than those in the Herpaly culture sites. (Bökönyi, 1959, 50-51).

Pomáz (Zdravlyák), nr. Budapest, N.C. Hungary, was excavated in 1956 by I. B. Kutzian (Kutzian, 1958, 81). Again, 90% of the total animal bone material is from domestic animals, especially cattle, with some sheep/goats and pig occurring in equal proportions; the few wild animal bones are from aurochs, wild pig and red deer. (Bökönyi, 1959, 52).

Thus, wild animal bones occur in equal quantities to domestic animal bones in the middle Linear Pottery culture sites of the lower and middle Tisza valley, similar to the quantities in the bone material of the Körös culture sites; the difference in the economy of these Linear Pottery sites from the preceding Körös sites is that the majority of domestic animal bones is from cattle, whereas in the Körös culture economy sheep/goats are the dominant/



dominant animal. In the last phase of the Linear Pottery culture in this area sheep/goats become even rarer, or absent altogether.

In the settlements of the middle phase of the Linear Pottery culture in the central part of the Great Hungarian Plain, the bones of wild animals are much less important and form only a small percentage. Domestic pigs are often as important as domestic cattle; in the later Linear Pottery culture settlements of the central Hungarian Plain area, a sharp increase in the number of wild cattle is seen, which has been interpreted as an increase in stock-breeding rather than an increase in hunting. It is obvious that on the Hungarian Plain, the economy of the agriculturalists was based on domestic animals especially cattle, but also pigs, much more than in the economy of the early agricultural communities of the Tisza basin who, like those of the Körös culture, relied very much more on produce from the water such as turtles, shell-fish, water-birds etc.

It is equally obvious that the process of adaptation to the wetter less sunny climate, as seen in the change from the predominance of sheep/goats to the predominance of cattle among the domestic animals, must have taken place in the early phase of the Linear Pottery culture as seen in the settlements of the central part of the Great Hungarian Plain, none of which have produced enough bone material for analysis.

The small amount of evidence available from the Linear Pottery culture of N.E. Hungary shows a similar predominance of domesticated animals as in the Alföldi, with cattle in the majority, and pig and sheep of less importance.

The analysis of the animal bone material from the west Hungarian sites shows a pattern which is seen in the majority of Linear Pottery settlements in Central Europe, with 90% of the bones being from domestic animals, and the /

the majority of those from cattle, with a smaller number of pigs, and then sheep/goats.

b) Czechoslovakia: very little evidence for the economy of the Linear Pottery culture settlements in Czechoslovakia is available, since almost no analysis of plant or animal bone remains has been made.

At Mohelnice in N.C. Moravia, cereal grains have been excavated, and when analysed showed that *T. Monococcum* predominated over *T. Dicoccum* (Hopf, 1962).

The animal bone material from the important settlement of Bylany, in E. Bohemia has recently been analysed by Clason of Groningen; although the analysis is not yet published, it is possible to say that the bones of domestic animals far outnumber those of wild animals; of the domestic animals, 90% are from cattle, with some pig, and very few sheep/goats. (Discussion with B. Soudský, Bylany April 1964).

c) E. Germany (Saxony and Thuringia): a very complete analysis of the animal bone material from settlements of all phases of the Linear Pottery culture in this area has recently been published (Müller, 1964), so that it will suffice here to summarise the results of this analysis.

From a total number of 31 settlements from the early phase of the Linear Pottery culture, the analysis shows an average percentage 96% of the total number of bones for bones from domestic animals and 4% for bones of wild animals. Of the wild animals, the greatest percentage is formed by roe deer and red deer, and then wild pig, with a few aurochs. Of the domestic animals, cattle form 60% of the bones, 28% being from sheep/goats and 11% from pigs. It is interesting to note the relatively high percentage of /

of sheep/goats in the domestic animal bones, as compared with sheep/goats in the later stage of the Linear Pottery culture in Hungary.

From a total of 51 settlements of the middle and later phase of the Linear Pottery culture in East Germany, 95% of the animal bone material is from domestic animals and 5% from wild animals. Among the wild animals, roe deer, red deer, wild pig and aurochs appear in approximately equal numbers. Among the domestic animals, sheep/goat and cattle are of almost equal importance, representing respectively 40.9% and 46.5% of the domestic bone material with only 12.6% being from pig. Obviously an average analysis taken from so many sites must include many examples with more or less cattle than the average; on one site there are even more sheep/goats than cattle. However, on an average a decrease in cattle and increase in sheep/goats may be seen in the later phase of the culture, with a very slight increase in pig. This pattern of economy must be an individual central German one, in which, throughout the Linear Pottery culture, cattle, although the dominant domestic animals, are only slightly more important than sheep/goats, and where pigs play a definitely minor part.

In the later stroke-ornamented ware culture, percentages among the domestic animals revert more to those of the Linear Pottery culture in W. Hungary and Czechoslovakia, where cattle are very much the dominant domestic animals, with pigs as secondary animals and sheep/goats being very unimportant.

d) N.W. Germany: as mentioned in the previous chapter, after an analysis of the flint industry from the Linear Pottery settlements of this region, there is evidence that, in the westwards expansion of the early agriculturalists, the economy based almost exclusively on cattle in Czechoslovakia /

slovakia was somewhat modified.

This evidence comes especially from the recently excavated settlement of Müddersheim, near Köln, where the animal bone material has been given a detailed examination and analysis (Schietzel (Stampfli). 1965, 115-123). The analysis shows especially an increase in the bones of wild animals, which form 28.80% of the total number of bones, and 46.6% of the total number of individuals represented, domestic animals making up 71% and 53% of the totals respectively. Among the wild animals, aurochs are by far the most important, so that this increase in wild animals need not be interpreted as an increase in hunting, but perhaps of supplementary domestication as in the Herpály culture; however, the sudden occurrence of arrowheads in the flint blade industry would support the former interpretation; besides aurochs, there is a small number of wild horses and wild pigs, and a few red and roe deer.

Among the domestic animals, 66.5% of the bones are from cattle, 20.7% are from pig and only 12.2% are from sheep/goats, thus showing a greater importance of domestic pig than is present in the middle phase of the Linear Pottery settlements of either E. Germany, Czechoslovakia or W. Hungary. These proportions for cattle, pig and sheep/goats, as well as the increase in aurochs, are very similar to features already seen in the Herpály culture sites of E. Hungary; the latter settlements however are slightly later than those of N.W. Germany.

It is impossible to tell if the pattern from N.W. Germany is repeated in the settlements of the Linear Pottery culture in the Low Countries, because, owing to the very acid nature of the soil of the settlements, no bones have survived.

The /



The site of Müddersheim has also produced evidence of *Hordeum vulgare*, including the naked variety, and *Triticum monococcum* (Schietzel, (Hopf), 1965, 123-124).

e) Poland: so far no detailed analysis has been made on the animal bone material from the settlements in south Poland which represent an expansion of the middle phase of the Linear Pottery culture from north Moravia. However an analysis has been made of the plant remains and impressions from the sites of Olzanica (Kozowski and Kulczycka, 1961, ), Ocjow (Jazdzewski, 1965, 61) in south Poland, and Szrzelce (Jazdzewski, 1965, 61) in Kujawia, N.W. Poland, has shown *Triticum dicoccum*, *T. monococcum*, *T. spelta*, *T. compactum* Host, *T. vulgare* Vill., *Hordeum* (including a many-rowed variety), rye, millet and oats (grown as a weed).

f) Ukraine and Moldavian SSR, U.S.S.R.: a detailed analysis has been made of the animal bone material from the lowest layer of the settlements at Floresti on the river Reut in the Moldavian SSR., representing a middle or later phase of the Linear Pottery culture, expanding from south Poland, as described in the previous chapter. (Passek and Chernush, 1963, 31-32). From the total number of animal bones, 44% are from wild animals representing 55% of the total number of individuals; thus there is more or less an equal number of wild and domestic animals. Among the wild animals aurochs, red deer and pig were the most important. Of the domestic animal bones 215 or 71.6% are from long-horned cattle, and 16 or 5% are from *bos brachyceros*; pig bones form 14.5% of the domestic bones, and sheep/goats are almost negligible. Thus, as in Czechoslovakia, cattle are the primary and pig the secondary domestic animals, but wild animals form a much greater percentage than in Central Europe.

From /

From the lowest layer at Nezviska, on the upper Dniester, in the Ukraine, no detailed bone analysis is available, but the plant remains from this phase of the Linear Pottery culture have been examined; (Chernush, 1962, 26; Passek and Chernush, 1963, 31). The cereal grain identified includes especially *Triticum dicoccum* and *Tr. Aestivum*.

g) Rumania: so far there is no animal bone or plant analysis from any of the late Linear Pottery settlements of N.E. Rumania available. There is an analysis in preparation from the animal bone material from the site of Glăvănești Vechi on the river Jijia near Iași, and so far it is possible to say that the proportions are roughly the same as those from Florești, except that sheep/goats are not quite so negligible; there are bones of 10 individual domestic cattle, of 5 individual pigs and 2 sheep/goats. (Comșa, 1959a, 47).

## SUMMARY

The earliest stages in the process of the domestication of sheep and goats, and of the cultivation of wheat and barley have been discerned in N. Iraq, N. Iran, Turkey, Jordan etc. in association with the latest Mesolithic early pre-pottery neolithic cultures. There were no wild sheep, and probably very few wild goats in post-glacial continental Europe; it seems that the domesticated examples from the pre-pottery neolithic settlements in Greece, such as Argissa, were introduced from outside,

probably Turkey, along with domesticated cattle and cultivated wheat and

barley; over 98% of the animal bone material from this site is from domesticated animals.

There is no evidence for a similar basically agricultural economy from any pre-pottery sites in the other parts of south-east Europe; the sporadic possible examples of domesticated sheep/goats from such sites in Rumania as Baile Herculane and La Adam, could very easily be contemporary and peripheral to the agricultural settlements of the Criş culture.

Wild cattle were common throughout the open forests of south-west Asia and continental temperate Europe. The evidence would point, however, to their initial domestication in south-west Asia on the settlements associated with the Late Neolithic/early chalcolithic cultures which are distinguished especially by the manufacture of monochrome and red-on-white painted pottery.

The cattle which appear in the earliest agricultural settlements of south-east Europe are already domesticated, as can be seen by their comparatively small size. Evidence for the supplementary domestication of local cattle, as represented by transitional domestic/wild examples and an increase in the number/complete/

complete transformation in the composition of the domestic animals: a great number of wild cattle in the bone material, occurs possibly on the Hungarian increase in cattle and deer. This change, representing the adaptation to the different conditions of temperate Europe, must have taken place initially during the early phases of the culture.

Pigs occur wild over a wide distribution in west Asia and Europe; they are comparatively easy to domesticate, and are particularly characteristic and prolific in settlements where an agricultural economy is well established. It seems likely that their initial domestication took place independently in different locations.

The main spread of agricultural techniques to south-east Europe is associated, except in Thessaly, with the expansion of the cultures and East Germany, from the Linear Pottery culture, characterised by painted pottery, macrolithic flint blades, and polished stone axes, and the beginning of "tell" settlements (Karanovo I/Starčevo/Körös/ and Criș). On most of the sites in Bulgaria, Yugoslavia and Rumania and Greece, bones of domestic animals form over 80% of the total; however, on the riverside and lakeside settlements of the Körös culture, domestic bones form only 60% of the total. From an analysis of the material from Thessaly, in the early neolithic layers, sheep/goats made up the majority of the domestic animal bones, with cattle and the pigs as secondary animals; in the later layers, pigs become the dominant animals. In the Criș and Körös cultures, however, sheep/goats were constantly the dominant domestic animals, and pigs were quite unimportant.

The spread of agricultural techniques into central and temperate Europe is associated with the expansion and development of the Linear Pottery cultures. Bone material from the earliest stage of this culture is not available, but the bone material from the middle stage of the culture shows a complete/



complete transformation in the percentages of the domestic animals: a great increase in cattle and decrease in sheep/goats. The change, representing adaptation to the different natural conditions of temperate Europe, must have taken place initially during the early phases of the culture.

On the settlements along the Tisza valley, the material from the middle phase of the Linear Pottery culture (III) shows 60% domestic animal bones from the total number, similar to the Tisza valley sites of the Körös culture; the material from the late phase (IV) shows a higher percentage of wild animal bones, especially pig and red deer, than domestic animal bones.

The bone material from the settlements in West Hungary, Czechoslovakia, and East Germany, from the middle phase of the Linear Pottery culture, shows that from the total, 90% of the bones are from domestic animals; whereas domestic animals from the Linear Pottery culture settlements of West Germany and the Ukraine form only 50-60% of the total, the wild animals consisting especially of *Bos Primigenius*.

Among the domestic animals of the Linear Pottery culture, cattle, with a few exceptions, are dominant, with pigs as secondary animals, and sheep/goats almost absent. In East Germany, however, there was an increase, for some reason, in the number of sheep/goats, and in west Germany and the Great Hungarian Plain, there was an increase in pigs.

### Analysis/

TABLE 3

151

Analysis of the animal bone material from Argissa-, Otzaki-, and Arapi-Magula  
in Thessaly (after Boessneck, 1962)

No. of bones No. of individuals Total no. of bones

I. Aceramic neolithic (Argissa)

	No. of bones	No. of individuals	Total % of bones
Cervus elaphus	2	1	
Capreolus Capreolus	3	2	
Bos primigenius	11	5	wild 0.9
Sus scrofa ferus	5	1	
Bos Taurus	103	8	
Ovis aries/capra hircus	1820	54	domestic 98.35%
Sus scrofa domesticus	216	19	
Canis familiaris	4	2	

II. Early Pottery Neolithic (Argissa)

	No. of bones	No. of individuals	Total No. of bones
Cervus Elaphus	1	1	wild 2
Sus scrofa ferus	1	1	
Bos taurus	8	2	no wild bones
Ovis aries/C. hircus	7	2	domestic 26
Sus scrofa domesticus	11	3	domestic 111

III. Proto-Sesklo culture (Argissa)

Cervus Elaphus	1	1	wild 1
Bos taurus	3	2	no wild bones
O. aries/C. hircus	5	2	domestic 13
S. scrofa domesticus	5	1	

III.(Contd.) /

Percentages/

III Proto-Sesklo culture (contd.) (Otzaki and Arapi)

	No. of bones	No. of individuals	Total no. of bones
<i>Sus scrofa ferus</i>	1	1	wild 1
<i>Bos taurus</i> (Argissa)	27	5	
( <i>O. aries</i> )	3	3)	
( <i>C. hircus</i> )	9	3)	
<i>O. aries/C. hircus</i>	46	9	domestic 82
<i>Sus scrofa domesticus</i>	7	2	
<i>Canis familiaris</i>	1	1	
IV. <u>Pre-Sesklo culture (Otzaki and Arapi)</u>			
<i>Carvus Elaphus</i>	3		wild 3
<i>Bos taurus</i>	65	15	
<i>O. aries/C. hircus</i>	108	26	domestic 219
<i>Sus scrofa domesticus</i>	44	14	
<i>Canis familiaris</i>	2	2	
V. <u>Early and Middle Sesklo cultures (Otzaki and Arapi)</u>			
<i>Bos taurus</i>			no wild bones
<i>Bos taurus</i>	21	5	
<i>O. aries/C. hircus</i>	41	7	domestic 111
<i>Sus scrofa dom.</i>	48	12	
<i>Canis familiaris</i>	1	1	
VI. <u>Late Sesklo culture (Otzaki and Arapi)</u>			
<i>Bos taurus</i>	12	3	no wild bones
<i>O. aries/C. hircus</i>	9	3	domestic 48
<i>Sus scrofa domesticus</i>	27	8)	

Analysis/Percentages/

TABLE 4

153

Percentages among the domestic animal bones at Argissa, Otzaki and ArapiDevetaki cave in North-central Bulgaria (after Mikov and Dzambazov, 1960)

	No. of bones	% of total no. of bones	% of individuals
<u>Aceramic neolithic (Argissa)</u>			
Bos taurus	5		
O. Aries/C. Hircus	at least 85		wild: at least 95
Sus scrofa domesticus	10		
<u>Proto-Sesklo culture (Otzaki and Arapi)</u>			
Bos taurus	34		31
O. aries/C. Hircus	57		56
Birds, fish, Unio shells etc.	9		13
<u>Pre-Sesklo culture (Otzaki and Arapi)</u>			
Bos taurus	30		domesti 28
O. aries/C. hircus	50		at least 19
Sus scrofa domesticus	20		26
<u>Early and Middle Sesklo culture (Otzaki and Arapi)</u>			
Bos taurus	18		21
O. aries/C. hircus	37		29
Sus scrofa dom.	45		50
<u>Late Sesklo Culture (Otzaki and Arapi)</u>			
Bos taurus	25		21.5
O. aries/C. hircus	19		21.5
Sus scrofa dom.	56		57

Analysis/



TABLE 5

Material from the Karanovo culture settlement of  
Analysis of the animal bone material from Karanovo I/II - IV layers at  
Devetaki cave in North-central Bulgaria (after Mikov and Dzambazov, 1960)

	no. of bones	total no.	% of total
	No. of bones	Total	
Bos primigenius	3	"some long bones"	
Cervus elaphus	87	at least 73	wild: at least 95
Capreolus capreolus	8	14	
Sus scrofa ferus	1	at least 5	89 34%
Vulpes vulpes	5	3	
Rabbit	3	3	
Birds, fish, Unio shells etc.			
Bos taurus		at least 11	
Capra hircus		at least 3 (jawbones)	
Ovis aries		at least 5 (jawbones)	domestic: at least 19
Sus scrofa domesticus		at least 6	
Canis familiaris		4	domestic 181 66%

Summary of the domestic animal bones

% of the total no. of  
domestic animal bones

26

71

1

1

99%

Analysis/

Analysis of the animal bone material from the Koros culture settlement of  
Maroslele (Pana) (after Bokonyi, 1964)

	no. of individuals	no. of bones	total no.	% of total
Pisces		34		
Emys orbicularis (marsh turtle)		3		
Aves (all water birds)	2	27		
Bos primigenius	1	8		
Cervus elaphus	1	1	wild 89	34%
Capreolus capreolus	3	5		
Vulpes vulpes	5	3		
Felis silvestris		3		
Sus scrofa ferus		1		
Lepus Eur.		3		
Bos taurus		48		
Ovis aries/Capra hircus		127		
Sus scrofa domesticus		3	domestic 181	66%
Canis familiaris		3		

Percentages among the domestic animal bones

	% of the total no. of domestic animal bones
Bos taurus	26
O. aries/C. hircus	71
Sus scrofa domesticus	1
Canis familiaris	<u>1</u> 99%

TABLE 7

Analysis of the animal bone material from the Koros culture settlement of  
Hodmezovasarhely (Bodzaspart) (after Bokonyi, 1959)

Site	no. of individuals	Wild Total	no. of bones	domestic Total	total no. of bones	% of total
<u>Hungary (Alföldi Linear Pottery III)</u>						
Badger	1		4			
Equus (asinus)	2	334	571	63.10	100	42.77
Capreolus cap.	1	61	138	66.27	57	46.58
Bos primigenius	1	558	463	wild 40	12	40%
Ovis aries	3	38	120	75.95	10	25.00
Bos taurus	5	2	85	-	2	-
<u>Hungary (Alföldi Linear Pottery IV)</u>						
				domestic 19		60%
<u>Percentage among the domestic animal bones</u>						
<u>Hungary (Eastern province IV)</u>						
Borsod (Derekegyháza)	18	-				% of total no. of domestic animal bones
<u>Hungary (Central province III)</u>						
Győr 1952	19	8.84	190	91.16	18	19.38
Győr 1954	55	10.35	562	89.64	51	19.38
Pannax		10.23	158	89.77	15	20.50
<u>East Germany</u>						
West-central Lin. Pott. I	91	4	1868	96		
West-central " II-IV	92	5	1325	95		
<u>West Germany (western province III/IV)</u>						
Widdersheim	64	28.80	100	71.20	13	40.30
<u>U.S.S.R. (Central province extension III/IV)</u>						
Florogti	230	44	298	55	34	44.50
<u>Romania (central province extension III/IV)</u>						
Tralan (D. Fintinilor)	117	34.72	212	62.90	12	58.71

Analysis/

Analysis/

Table 8

Analysis of the animal bone material from the sites of the Linear Pottery culture. I: The percentage of wild and domestic animal bones

Site	Total number of bones				Total number of individuals			
	Wild total	%	Domestic total	%	Wild total	%	Domestic total	%
<u>Hungary (Alföldi Linear Pottery III)</u>								
Tisza valley { Lebo	334	36.9	571	63.10	109	49.77	110	50.23
Gorzsa	91	39.73	138	66.27	67	46.53	77	53.47
Szegvár	358	43.60	463	56.40	111	48.05	120	51.95
central { Szilmeg	38	24.05	120	75.95	15	22.39	52	77.61
Alföldi { Polgar	2	-	85	-	2	-	16	-
<u>Hungary (Alföldi Linear Pottery IV)</u>								
Tisza { Lebo	131	63.59	75	36.41	-	-	-	-
Central { Berettyó	2138	77.38	625	22.62	764	70.35	364	29.65
Herpály	410	76.06	129	23.94	148	69.48	65	30.52
<u>Hungary (Eastern province IV)</u>								
Borsod (Derekegyhaza)	16	-	77	-	8	-	29	-
<u>Hungary (Central province III)</u>								
Győr 1952	19	8.84	196	91.16	16	11.76	120	88.24
Győr 1954	65	10.36	562	89.64	51	11.23	403	88.77
Pomáz	18	10.23	158	89.77	15	18.50	66	81.50
<u>East Germany</u>								
West-central Lin. Pott. I	91	4	1868	96	-	-	-	-
West-central " II-IV	62	5	1325	95	-	-	-	-
<u>West Germany (western province III/IV)</u>								
Müddersheim	64	28.80	156	71.20	13	46.60	15	53.40
<u>U.S.S.R. (Central province extension III/IV)</u>								
Florești	230	44	298	55	34	44.50	42	55.50
<u>Rumania (central province extension III/IV)</u>								
Traian (D. Fintânilor)	117	34.72	212	62.90	12	38.71	17	54.84

Traian (D. Fintânilor) 104 68.2 60 29.8 10 8.7 9.50 8 27.7 3 16.

The remaining percentage of domestic animal bones is made up of the bones of Cattle, Equidae.



Table 10

Table 9 the animal bone material from the sites of the Linear Pottery

## Analysis of the animal bone material from the sites of the Linear Pottery culture

## II Percentage among the domestic animal bones

Site	Fish Birds Turtle Pig Roe Red Aurochs Horse Fox Cat												
	Deer. Deer.												
	Total no. of bones						Total no. of individuals						
Pott. III)	Cattle		Pigs		Sheep/goats		Cattle		Pigs		Sheep/goats		
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	
Lebő	54(18)	-	8(2)	67(23)	10(14)	48(18)	137(2)	-	-	-	-	-	
Pott. III)	12(10)	-	1(4)	17(13)	8(5)	20(13)	25(20)	-	-	1(1)	-	-	
Szegvár	14(8)	52.1	18	3	13	2	88	80	10	9	10	9	
Szilmege	1(1)	10.1	15	11	10(7)	5	51	68	14	18	5	7	
Szegvár		317	68.7	84	18	30	6.4	67	56	33	27.5	13	10.9
Szilmege		53	44.1	51	42.5	9	7.5	27	51.9	17	32.7	4	7.6
Pott. IV)													
Lebő	21	77	-	4	12	2	34	9	22	4	-	2	-
Pott. IV)			2(2)	5(5)	117(82)	25(27)	481(241)	1485(477)	-	-	5(4)	2(1)	-
Herpály	1(1)	64	85	9	12	4	82	-	207(4)	-	-	-	-
Herpály Lin. Pott.		392	62	180	28.8	43	7.4	207	57	111	30.5	10	2.7
Herpály		70	54	32	24.6	21	16.2	27	50	22	42.3	12	23
Herpály Lin. Pott.)						1(1)	11(4)	2(1)				1(1)	
Sod Lin. Pott. III)		56	71.5	10	15.5	11	14.3	17	60	7	23.3	5	16.6
Sod Lin. Pott. III)						2(2)		17(14)					
1952		142	72.5	23	11	29	14.2	78	65	16	13.3	24	20
1954		413	62.5	63	10.8	83	14.0	276	69	48	12	76	19
1954		107	67.8	23	14.5	25	15.8	30	45.4	16	24.2	17	25
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The remaining percentage of domestic animal bones is made up of the bones of Cantis familiaris.

Table 10

Analysis of the animal bone material from the sites of the Linear Pottery culture.

III The wild animal bone material

Site	Fish	Birds	Turtle	Pig	Roe Deer.	Red Deer.	Aurochs	Horse	Fox	Cat
<u>Hungary</u>										
(Alföldi Lin. Pott. III)										
Tisza	Lebő	51(16)	-	8(2)	67(23)	18(14)	49(18)	137(32)	-	-
	Gorzsa	12(10)	-	8(4)	17(13)	8(6)	20(13)	25(20)	-	1(1)
	Szegvar	14(8)	2(2)	66(6)	60(23)	18(14)	54(21)	137(33)	1(1)	4(1)
	Szilmeg	1(1)	-	-	14(5)	10(3)	9(3)	1(1)	-	2(1)
central	Polgár	-	-	-	-	-	-	2(2)	-	-
(Alföldi Lin. Pott. IV)										
Tisza	Lebő	21	-	8	32	12	34	22	-	2
	Berettyó	-	2(2)	5(5)	117(82)	35(27)	461(241)	1485(477)	-	5(4)
	Herpály	1(1)	-	-	36(22)	4(4)	82(39)	287(82)	-	-
(north-east Hungary Lin. Pott, III/IV)										
	Borsod	-	-	-	-	1(1)	11(4)	2(1)	-	1(1)
(west Hungary Lin. Pott. III)										
	Győr 1952	-	-	-	-	2(2)	-	17(14)	-	-
	Győr 1954	-	-	-	9(8)	3(3)	2(2)	48(37)	-	-
	Pomáz	-	1(1)	2(1)	5(4)	1(1)	3(2)	4(4)	-	-
<u>East Germany</u>										
	Lin.Pott. I/II	3	2	-	13	25	20	7	4	5
	Lin.Pott. III/IV	-	6	-	10	16	12	1	2	11
<u>West Germany</u>										
(Lin. Pott. II/III)										
	Müddersheim	-	1(1)	-	3(2)	2(1)	2(1)	49(4)	4(2)	-
<u>J.S.S.R.</u>										
(Lin. Pott. III/IV)										
	Florești	-	-	-	52(10)	-	75(10)	92(8)	-	-
	Traian(D.Fintinilor)				13(2)	6(3)	97(6)		2(1)	

The total in brackets represents the number of individual animals.

## Chapter I Settlements and houses of the Linear Pottery 151

### 1) Settlements and houses of Starcevo, Koren, Karanovo 151

## PART II Houses and building methods of the Linear Pottery 155

### 3) Interpretation of the houses of the Linear Pottery 159

Features exclusive to the Linear Pottery cultures, and which are the result of the adaptation of the early agriculturalists from south east Europe to the temperate environment of

## Central Europe. 161

### 1) Evidence for shifting settlements 161

#### lack of deep stratification and "stair" 161

#### Methods for calculating duration of site 167

#### Statistical analysis of pottery 168

#### Stratified storage pits 169

#### Hypothesis of cyclic agriculture 169

#### Summary 170

## Chapter III Disappearance of which- and black-ware pottery 171

### 1) Distribution of clay figurines in the Linear 171

#### Pottery and Starcevo-Koren-Karanovo 171

### 2) Distribution of clay figurines in the 171

#### clay stamp-ware 171

#### triangular clay vessels 171

#### clay weights 171

#### clay spindles 171

#### clay spindle 171

#### Summary 171

## Chapter IV Fabric, form and decoration of Linear Pottery 171

### 1) Fabric of pottery of central and south Europe 171

### 2) Form of the pottery of central and south Europe 171

### 3) Decoration of pottery of central and south Europe 171

### 4) Classification system for relative chronologies 171

#### for the Linear Pottery 171

#### Summary 171

<u>Contents</u>	161
<u>Chapter 1</u> Settlements and houses of the Linear Pottery	164
1) Settlements and houses of Starcevo, Koros, Karanovo	164
2) Houses and building methods of the Linear Pottery	166
3) Interpretation of the Houses of the Linear Pottery	169
4) Plan and orientation of the houses	173
5) Analysis of the evidence for surface structures	175
6) Atypical houses in the Linear Pottery settlements	183
Summary	189
<u>Chapter II</u> The economic pattern of shifting agriculture	193
Evidence for shifting settlements	193
lack of deep stratification and "tells"	
Methods for calculating duration of site	197
statistical analysis of pottery etc.	
Stratified storage pits	198
Hypothesis of cyclic agriculture	199
Summary	200
<u>Chapter III</u> Disappearance of south-east Europe features	203
1) Distribution of clay figurines in the Linear Pottery and Starcevo-Karanovo-Koros cultures	203
2) Distribution of clay stamp-seals, spatulae etc.	220
Clay stamp-seals	220
triangular clay vessels	221
clay weights	222
clay spoons	223
bone industry	225
Summary	225
<u>Chapter IV</u> Fabric, forms and decoration of Linear Pottery	227
1) Fabric of pottery of central and south Europe	227
2) Forms of the pottery of central and south Europe	235
3) Decoration of pottery of central and south Europe	243
4) Classification systems and relative chronologies for the Linear Pottery	254
Summary	267



## Introduction

In Part I of this study, features which are characteristic of the early neolithic cultures of south-east Europe and which occur also in the settlements of the earliest agriculturalists north of the Danube river, were described in order to demonstrate that the Central European Linear Pottery cultures represent basically a northwards expansion of the south-east European early agricultural communities.

It was also shown, however, that the natural environment of central Europe north of the Danube was not identical to that of the Mediterranean woodlands of the nuclear Balkan area; the colonisation pushed the early agriculturalists beyond the limits of the zone where mud-brick building, a stable existence based on high agricultural techniques and, therefore, the formation of tell settlements were possible.

The northwards expansion into temperate Europe was concentrated on the loess deposits, which occur in the great river basins of central Europe as far as the moraines of the north European Plain. (Butzer, 1965, fig. 80). The chernozem and, further west, the rich brownearth soils on the loess deposits, were dry and non-acid, with a natural covering of deciduous woodland, not unlike that of south-east Europe; once cleared and burnt, the soils are fertile and produce a high yield of crops with very little effort; but unless fertilisers or other conserving methods are used, the yield soon drops and the soils become exhausted and useless. The process of soil exhaustion in the early agricultural settlements of central Europe seems to have taken an average of 10-15 years depending on whether the soil was brownearth or chernozem. After this short period, it was necessary for the settlements to be abandoned, and to be re-established in the nearest patch of virgin or rejuvenated loess woodland.

Thus, it was impossible for any large tell settlements to be established, and it was inevitable that under these different conditions, however slight they may basically have been, a different type of settlement, economy and culture would develop.

It is this adaptation by the early neolithic communities in central Europe to shifting settlements with the associated features of new building methods, types of structures, and economic and social patterns, and the impoverishment of the material culture, which will be discussed in this Part II.

There is very little evidence for the houses of the Karanovo I culture of Bulgaria. Probably the best examples are from Karanovo itself (Georgiev, 1961, 62), Azarak (Georgiev, 1965, 7), and Benjate (Deter, 1950, 1-21; Baroin, 1959a, 553), all in south Bulgaria. The houses were square or rectangular, approximately 6 m., with only one room; there was often a round hearth at one end and the entrance at the other; the walls were basically of baked clay with a light wooden framework, approximately 16 post-holes in their thickness. Very little evidence for interior structures remains, but the houses are likely to have had a gabled roof, although analogies for these in house models are all from the later neolithic period, especially the Gumelnitsa culture (Pigut, 1965, 44).

The settlements consisted of 15 houses at Azarak and approximately 50 houses at Karanovo, which were not orientated in any particular pattern, and were often no more than a metre away from each other.

Excavations on the Starčevo culture sites are confined to the settlements of the transitional region north of the Danube in Vojvodina (N. Yugoslavia). The houses which have been claimed for the site of Starčevo itself, on the north bank of the Danube, at Pandžev, are complex groups of "pit-dwellings" (Fawkes, 1935).

## CHAPTER I

### The settlements and houses of the Linear Pottery cultures of Temperate Europe.

Before giving a detailed analysis of the settlements and houses of the Linear Pottery cultures, it would be wise to give an outline description of the settlements and houses of the early neolithic houses of south-east Europe, with which they are contrasted:

#### 1) The settlements and houses of the Starcevo, Karanovo I and Koros Cris cultures.

There is very little evidence for the houses of the Karanovo I culture of Bulgaria. Probably the best examples are from Karanovo itself (Georgiev, 1961, 62), Azmak (Georgiev, 1965, 7), and Banjata (Detev, 1950, 1-21; Berciu, 1959a, 553), all in south Bulgaria. The houses were square or rectangular, approximately 6-7m., with only one room; there was often a round hearth at one end and the entrance at the other; the walls were basically of baked clay with a light wooden framework, approximately 16 post-holes in their thickness. Very little evidence for interior structures remains, but the houses are likely to have had a gabled roofs, although analogies for these in house models are all from the later neolithic period, especially the Gumelnita culture (Piggot, 1965, 44).

The settlements consisted of 13 houses at Azmak and approximately 50 houses at Karanovo, which were not orientated in any particular pattern, and were often no more than a metre away from each other.

Houses on the Starčev<sup>v</sup> culture sites are confined to the settlements of the transitional region north of the Danube in Vojvodina (N. Yugoslavia). The houses which have been claimed for the site of Starčev<sup>v</sup> itself, on the north bank of the Danube, at Pančev<sup>v</sup>, are complex groups of "pit-dwellings"; (Fewkes, 1933).

It is probable, however, that the function of the pits was to provide building material for surface houses of the Karanovo I type, for there are ample traces of baked clay with wicker impressions (Garašanin D., 1954, 17-30).

At the site of Vinča on the other side of the Danube, at Belgrade, there are traces of rectangular houses of wattle and daub on a light wooden framework, from the lowest layer (9.3-8m deep) (Milojčić, 1949, 72; Jovanović, 1960, 9-19).

Rectangular houses, of small dimensions, and of baked clay on a light wooden framework have also been found on two of the settlements by Lake Luda, near Subotica, near the Hungarian border: at the site of Nosa (Biserna Obala) (Garašanin M., 1958a, 4) and at Budžak (private communication from Laszlo Szekeres, February 1966). In these sites, however, the post-holes for the uprights of the framework are much more clearly defined than the wattle and daub walls, whereas in the houses of the Karanovo I culture, and, further south, in Greece, the foundations of the clay walls remain up to a height of 30 cm. or more. The dimensions of the Starčevo/Körös houses in the transitional area are the same as, or rather smaller than those of the nuclear Balkan area.

The same may be said for the scant evidence for surface houses in the Körös culture of south-east Hungary (Kutzhian, 1947, 11). The trapezoid house from Kotacpart (Vata tanya) which could as easily be described as an irregular rectangle, is only approximately 25 m., and is defined especially by post-holes sloping at an angle of  $45^{\circ}$  at each corner; on top of this plan, however, there was a mass of burnt broken wattle and daub (Banner, 1935, 98).

Houses have also occurred at the sites of Kisajaksor near the confluence of the Tisza and Körös rivers and Nagyajaksorpart in the same region (Schupiter, 1931, 56, 59; Zalotay, 1932, 60, 72).



69:2 In passing, it is interesting to note a very rare example of a Koros culture house-model from the site of Röszke (Ludvar) near the confluence of the Tisza and Maros; the fragment, excavated from a large pit with material of the Koros culture in 1964, represents the gabled ridge of a roof with raised roof beams attached to it, and an animal head at one end, presumably above the door. (Discussion with Oto Trogmayer at Szeged in April 1965). Similar houses were found in sites in the same area but from a slightly later period and will be discussed below.

## 2) Houses and Building methods of the Linear Pottery cultures.

A tendency towards a heavier or more important wooden framework may be seen in the houses of the Starčevo/Körös and Körös cultures, but the shape and dimensions remain basically the same as those of the houses of the tell settlements of the nuclear region in South Bulgaria, Greece, and probably Yugoslavia south of the Danube, although there is almost no evidence for houses from sites in this latter area.

There is rather an impoverishment in the dimensions of houses and settlements north of the Danube, but this is likely to reflect a decreased use of advanced agricultural techniques and food-production.

North of the transitional region, however, in the early neolithic settlements on the loess deposits of temperate Europe an entirely different method of building and style of house may be seen. The lack of large-scale systematic excavations from this period in Hungary prevents us from seeing any of the settlements of the earliest phase of the Linear Pottery culture, except for a few fragments, consisting of a series of pits; thus it is impossible to tell if the new building method was developed in this area where the formation of the Linear

Pottery culture appears to have occurred, or whether it was a result of further expansion and development north and west of the formative area.

No systematic excavation has been undertaken on the later Linear Pottery culture settlements in Hungary. Thus the problem must remain open to speculation until excavations are carried out in Hungary which open up large enough areas to see the obscure traces of the ground-plans of houses. House plans of the distinctive characteristic Linear Pottery culture type were first recognised in north-west Germany at Köln (Lindenthal) (Buttler, 1931, 244-252), but they have since been excavated in large settlements in Holland, Central and East Germany, and Czechoslovakia. (Waterbolk and Modderman, 1958/9, 163-178; Stieren, 1951, 61-88).

The house type of the linear pottery cultures is so distinctive and uniform over the whole area of its diffusion, that it has been described in detail many times over. It will suffice here to say that it consists basically of long houses, of a regular rectangular shape, with a constant width of 6-8m., and length varying from 8m. to 45m. average 20m. (Soudský, 1962, 197); the walls were built of a heavy timber framework with wattle and daub, represented by long rows of post-holes; the three inner rows of post-holes represent the timber supports for the gabled roof. Material for the clay part of the walls was excavated from the loess around the houses, as may be seen now in the long "building-pits" which border the houses, and which were used subsequently for rubbish, and hearth-and oven-places.

Variations in this simple plan include the addition of a bedding trench for posts at one end of the house (especially the north or north-west end), or even all round the house; also a concentration of post-holes at one end (especially the southern end), sometimes with a bedding trench for each of the interior posts for

greater stability.

In the western province of the Linear pottery cultures, that is in west Germany and Holland, the presence or absence of these variants serves to distinguish an earlier and later type of house within the culture (Waterbolk and Modderman, 1958/59, 163, 167):

a) the earlier Geleen type with a bedding trench on the north-west end which stretches as far as at least the third horizontal row of post-holes, and sometimes all round the walls; and two or three horizontal rows of post-holes in the south-east end of the house with elongated individual bedding trenches for the interior post-holes. In the middle part of the house the post-holes are arranged more widely apart in what has been described as a Y - configuration.

b) the later Elsloo type in which the north-west bedding trench is much shorter or missing, and the south-eastern conglomeration of post-holes with individual bedding trenches is also missing; the middle part usually consists of simple rows of post-holes arranged wide apart, but without the Y shape.

In the central and west-central provinces of the linear pottery culture, that is East Germany, Bohemia and Moravia in Czechoslovakia, as seen especially in the site of Bylany in Bohemia, houses with a bedding trench along the northern end occur throughout all the phases of the settlement, but the closely packed rows of post-holes at the southern end occur only in houses of the first seven or eight phases of the settlement (that is the first half). (Soudský, 1960, 6-9; 1962, 198).

In Moravia, the most important site from the point of view of houses is Mohelnice, n.w. of Olomouc (Tichý, 1962, 250-254). Often the walls of the houses were represented by post-holes very close together, possibly in lieu of a bedding trench since this was a comparatively rare feature in the Moravian houses. The interior rows of post-holes were arranged much further apart than those representing



the walls, and very few houses showed a conglomeration of interior post-holes at the southern end. A very distinctive feature of the Moravian houses, as seen in Hut XII at Mohelnice were two bedding trenches, approximately 2m. long and half a metre wide along the middle of the outer edge of each long wall; this same hut also showed agglomerations of post-holes at its northern end.

### 3) The interpretation of the Houses of the Linear Pottery culture.

When they were first excavated at Köln (Lindenthal), the structures now regarded as houses were interpreted as barns, since their floors had no habitation debris or traces of internal structures or furniture, and it was thought that the mass of post-holes precluded any dwelling activity within the houses; the post-holes were presumed to have supported a raised floor, as well as the roof (Buttler and Haberey, 1936, ;Buttler, 1938, 13).

The long pits alongside the rectangular structures, whose primary function of providing material for the walls of these structures is now recognised, were interpreted as the actual places of habitation, since they contained all the archaeological material, including hearths and ovens etc. They were regarded as "pit-dwellings", perhaps a little crowded, but with a wattle and daub superstructure on a light wicker framework, in much the same way that many of the pits in the early neolithic settlements of south-east Europe are interpreted even by present-day prehistorians. (Buttler and Haberey, 1936, 34-38).

This interpretation was first questioned by Oscar Paret who disagreed with the hypothesis of the use of the large surface rectangular structures as barns for animals, and recommended the hypothesis of their function as dwelling-places for people and animals, with raised wooden floors (Paret, 1942, 90). An explanation for the lack of habitation debris in the large rectangular structures, and for its



abundance in the pits, is likely to be found not so much in the "raised wooden floors", but in the highly erodable qualities of loess and its soils.

A few hours of heavy rain can transform the local scenery of an area of unprotected or uncovered loess into an unrecognisable mass of gulleys and cracks, which as quickly dry in the sun into a dusty powder, and a whole inch of the surface can be removed by wind in a single day. It has been estimated that in Bylany at least half a metre of the original chernozem surface was removed in this way after the houses were abandoned, so that the original floor of the houses has disappeared leaving chernozem only in the deeper post-holes and pits, along with the habitation debris which was deposited in them as rubbish. Thus the pits and post-holes too were half a metre deeper than they are when excavated. (Soudský in discussion at Bylany August 1962). From the cross-section of post-holes, it is possible to see that the posts themselves were often only half as large in diameter as the post-holes and that they would not have encumbered domestic activity within the houses (from detailed plans of the cross-profiles of post-holes at Bylany).

Even less of the original surface of the settlements has been preserved in west Germany and Holland, where the brownearth was eroded more easily than the central and east European chernozem; in some sites, such as Elsloo, the post-holes survive only as mere darker shadows against the lighter sub-soils. (Modderman, 1958-59, 29).

In some of the sites of the Moldavian S.S.R., such as Florești, it seems that so little of the original settlement surface remains, due to river as well as wind action, that no trace of post-holes has survived; thus the only evidence for habitations, the long pits, of very similar dimensions to those of the central European Linear Pottery culture settlements, have been interpreted as pit-dwellings.

(Passek, 1962, 131; Passek and Chernush, 1963, 23-25). However, it seems probable from the arrangement of the pits in parallel rows, 6 - 8m. apart, that there were originally five rows of post-holes representing long rectangular surface structures 6 - 8m. wide between "building-pits" just as in the Linear Pottery settlements in central and west Europe.

The new interpretation of the structural features of Linear Pottery settlements was enlarged by Childe (1949, 77-78), and the settlements were analysed in detail in the light of this new interpretation (Stieren, 1951, 61-88).

The lack of evidence for interior furniture and divisions in the houses has led to difficulties and disagreements in the interpretation of these long houses in terms of social organisation:

a) the first interpretation, based especially on the Dutch linear pottery houses, is of a long house divided into three parts, each part having a separate function (de Laet, 1966, ; Waterbolk and Modderman, 1958-59, 168-169). One part consists of the north-western end, which had a strengthened wall, represented by the bedding trench; the middle part with wider spaced posts which is regarded as the main living area; and the south-eastern end with a conglomeration of posts which are thought to have been for supporting a second floor, or raised floor for storage purposes. The main living area, therefore, would not be any larger than the square/rectangular small one-roomed houses of the early neolithic settlements of south-east Europe, such as at Karanovo I; in this way, the Linear Pottery culture houses have been interpreted as representing an extension of the nuclear family organisation of the early agricultural communities of south-east Europe.

b) the second interpretation takes into account the houses of the other areas of the Linear Pottery culture such as C. Germany and Czechoslovakia where

the tripartite division within the houses is not so marked. The southern end with the conglomeration of post-holes is interpreted as a second floor with domestic activity going on underneath; the upper floor was almost certainly for storing grain, since this structural feature disappears at Bylany when the method of storing grain in pits inside the house becomes dominant (Soudsky, 1962, 198).

By analogy with the later Lengyel house at Postoloprty, Bohemia, whose shape and dimensions are very similar to those of the Linear Pottery culture houses, and whose floor surface along with four contemporary interior hearths has been preserved, (Soudský, 1955), the hypothesis has been evolved of the long houses representing the living-quarters of an extended family, that is three or four nuclear families. (Childe, 1957, ; Soudský, 1962, 199; Piggott, 1965, 52). The culture represented by the Postoloprty house is a development of the late Linear Pottery culture of Bohemia, and in fact the same culture and houses can be seen in the last phases at Bylany (Soudský, 1960, 8).

It seems possible that if one may take the later Bohemian Lengyel culture houses as analogies for the internal arrangements in the Linear Pottery culture houses, one might also be able to use the evidence for internal arrangements provided by the houses of the Tripolye culture in the Moldavian and W. Ukrainian S.S. Republics. (Passek, 1949 ; 1961). For these houses, also representing extended family dwelling-places, are later developments in an area previously occupied by communities with the Linear Pottery culture. The problem, however, will be discussed below in connection with the Linear Pottery house at Nezviska.

These two theories also involve two different interpretations for the small shortened versions of the long-houses which appear, as has been shown at Bylany, in certain phases of the Linear Pottery culture settlements, where they

have been interpreted according to the second theory as representing offshoots of the large extended families; that is, nuclear families who are the first to break away in order to found new settlements, as grain yields drop or overpopulation becomes imminent. (Soudský, 1962, 198).

According to the first theory, the small houses represent grain storage houses with raised wooden floors (de Laet, 1958, 62).

It is possible that the two seemingly incompatible hypotheses for the interpretation of the long-houses of the Linear Pottery culture settlements, refer to two differing settlement types within the same culture group, connected also with the slightly differing economic patterns, between the western province of the Linear Pottery culture as represented by the west German and Dutch sites, and the more central province as represented by the Central German and Czech sites.

#### 4) The plan and orientation of houses in the settlements of the Linear Pottery cultures.

The settlements of the linear pottery culture are distributed especially where the loess is deposited on lowland plains and lower river terraces. Although many of the sites excavated have produced a large number of houses, such as Bylany (over 100) and Sittard (48), the settlements at any one period are unlikely to have comprised more than 20 houses.

There have been various methods evolved for distinguishing houses of different phases from the same settlement. Sangmeister favoured a method, based on the evidence especially of Köln (Lindenthal) and Arnsback, of grouping together houses with the same orientation, implying that in the Linear Pottery settlements the houses were all arranged parallel to each other (Sangmeister, 1951, 90-101). In this way he was able to distinguish approximately seven phases of settlement at



Köln (Lindenthal). All the houses were orientated North-west-South-east, but the groups deviated from  $3^0$  to  $29^0$  from this line towards the north (Buttler and Haberey, 1936, Plan 1; Sangmeister, 1951, 97-98).

A more comprehensive method using observation of vertical and horizontal stratigraphy and analysis of the exact position and percentage of the different types of decorated pottery has been developed in interpreting settlements such as Sittard (Modderman, 1958-59, 36-75) and Bylany (Soudský 1960, 13-33; 1962, 193-194). By this latter method it is possible to see that the site of Bylany in Bohemia was resettled by communities with the Linear Pottery culture approximately 14 times (discussion with Soudský at Bylany March 1965).

Of the 56 houses whose horizontal and vertical position had been analysed by 1962, in conjunction with a statistical analysis of the pottery in the associated "building-pits", the distribution into phases is as follows:

Violet I	3
Violet II	3
Orange	5
Grey	4
Green I	3
Green II	4
Red	6
Yellow	10
Blue	12
Brown I - III	6

(Soudský, 1962, 197)

It is interesting to note that the houses of one phase at Bylany do not all have

exactly the same orientation, although all the houses of the settlement, as in nearly every other Linear Pottery settlement, are oriented from N/NW to S/SW.

Since almost half the houses at Bylany are not yet associated with a specific phase, it is still too early to make any except general statements about the population of the settlement, but it seems that the increase in the number of houses and their length coincides with the end of the middle period of the Linear Pottery culture in Bohemia (red phase) and the beginning of the late period of its development (yellow and blue phases). It is also in this latter period that there is a great increase in the number of short rectangular houses, interpreted by some as granaries and by others as one-family houses, and there is the disappearance of the conglomeration of post-holes at the southern end of the long-houses. (Soudsky, 1962, 192).

Thus, from the present state of research, there is no evidence for deliberate planning in the Linear Pottery settlements, except for a general N-S or NW-SE orientation of the houses. There is also very little evidence for the delimitation of the settlements by fences, ditches, etc., although this is a common feature in the later neolithic settlements of this area, including Bylany itself (Soudsky, 1962, 200). At the site of Káln (Lindenthal), however, there is a ditch around part of the settlement (Buttler and Haberey, 1936, 20-22), and the ditch at Sittard in Holland possibly belongs to the Linear Pottery settlement (Modderman, 1958-59, 75).

##### 5) Analysis of the Evidence for Surface Structures from the sites of the Linear Pottery Cultures.

The evidence excavated up till 1950 has been comprehensively analysed, but since then very little synthesis has been made. (Stieren, 1951, 61-88; Sangmeister

1951, 89-109). It is not intended here to attempt a detailed analysis of the available evidence for the structural features of the Linear Pottery settlements, but merely to make a survey of the old and new material, in order to clarify the distribution of the evidence, and to distinguish any chronological or spatial differences in the structural features.

In this survey, the evidence will be reviewed simply by regions, but in the diagrams it will also be divided as far as possible into chronological periods of the Linear Pottery cultures.

A) Hungary -- as mentioned above, the excavations of the Linear Pottery settlements have been small, and no surface structures have been distinguished. From the later development of the Linear Pottery cultures represented by the Tisza culture, especially in its expansion to south-east Hungary, there is considerable evidence for houses from the settlements, but since the houses are not at all typical for the Linear Pottery culture, these will be discussed in a special section below.

B) Austria -- the only evidence for long-houses from the Linear Pottery culture is from Mannsworth near Vienna (Felgenhauer, 1960, 1-10; Tichy, 1962, 250 n.36).

C) Czechoslovakia i) Slovakia has only two sites of the linear pottery culture with houses; all are in south-west Slovakia:

a) Hurbanovo(Bacherov Majer) nr. Komarno on the R. Danube; 2 long houses, both with bedding trenches all round; the first one was 6 12m., with possible evidence of white and red painting on the daub of the walls; the second house was 14 6m. (Novotný, 1958, 13-14; Čaplovic, 1956, 311-321.

b) Šarovce, near Želiezovce, on the R. Hron; house with a bedding trench round part of it, and post-holes; similar dimensions to the Hurbanovo huts.

(Novotný, 1958, 14)

ii) Moravia has also only two Linear Pottery sites with traces of houses: a) Unicev nr. Olomouc, central Moravia; the incomplete ground-plan of a house. (Tichý, 1962, 250; Nekvasil, 1953, 726-7).

b) Mohelnice, n.w. of Olomouc, in north central Moravia; the site is still being systematically excavated on but a rather smaller scale than Bylany. By 1962 at least 12 long-houses had been excavated in an area of 15,000 squ.m. 4 of these houses (II, III, VI, and XII) have the very distinctive Moravian feature of bedding trenches for part of the length of the house outside the walls. None of the houses have bedding trenches at their northern end; it is obvious from the range of pottery as well as the overlapping of house-plans that more than one phase of settlement is represented at this site, but results of statistical analysis of the pottery have yet to be published. However, the site is important for providing one or some of the few examples of surface structures from almost the earliest phase of the Linear Pottery culture in Czechoslovakia.

(C 14 date: Bln 102 4395±100 b.c. (Radiocarbon VI, 1964))

The conglomeration of post-holes at the southern end, which has been interpreted as representing a second floor, is also a rare feature in the Moravian houses; it possibly occurs in House I, but this overlaps with house VI so that it is difficult to tell to which house the larger post-holes belong, and whether the apparent conglomeration is merely due to the overlap. In House XII, however, there is definite evidence for grouping the interior post-holes together, with up to 8 in one bedding trench; this feature occurs at the southern end. Thus it is clear from even these few examples of the houses of the central province of the Linear Pottery cultures that they are not at all the same in their details as those further west. (Tichý, 1962, 250-254).



iii) Bohemia has 7 sites with evidence for the ground-plan of houses:

a) Bylany nr. Kutna Hora, E.C. Bohemia; at least 40 squ.km.; the site is in the process of being systematically excavated, and the houses analysed from the point of view of horizontal and vertical stratigraphy, and the pottery from the associated pits is being used to place the houses in one of the 14 chronological phases. The results are due to be published in full in two or three years time.

Over 100 houses have been excavated, over half of which have been analysed. Some of the houses have bedding trenches at their northern end, including houses of all phases. The conglomeration of post-holes at the southern end, however, occurs only in houses of phases which represent the early and middle periods of the Linear Pottery culture an increase in the number of houses, especially the shorter buildings, may be seen (Soudský, 1960, 5-36; 1962, 190-200).

b) Jazlovic, south of Praha, C. Bohemia; the site consisted of a number of fragments of houses, including one 14 8m. with no bedding trench. (Stieren, 1951, 74; Sangmeister, 1951, 101).

c) Postoloprty, nr. Louny, R. Ohře, N.W. Bohemia; this is the settlement which also produced the 'Lengyel' culture house with three hearths in situ (Soudský, 1955, ). At the site of "Zatec" nearby, was a settlement of the middle phase of the Linear Pottery culture with a very long rectangular building: 41 7.50m., consisting of 5 simple rows of post-holes, but no bedding trench. (Soudsky and Buchaldek, 1950, 208-212).

d) Stvolínek (Germ. Drum) nr. Most, N.W. Bohemia. Part of a long house 8 15m. with simple rows of post-holes, and no bedding trench (Stieren, 1951, 74; Franz, 1931, 252-255).

e) Tuchlovic, w. of Kladno, C. Bohemia. Fragment of a long-house consisting of two rows of 13 post-holes 15 m. long, and pits alongside. (Šneidrova, 1955, 569-577).

f) Tuchomyšl, nr. Usti nad Labem, N.C. Bohemia; fragment of a long-house consisting of 23 post-holes arranged in 3 rows 6 - 8 m. long (Šneidrova, 1955, 574; Simbriger, 1931, 1-5).

g) Uhřetice, nr. Chrudim, E. Bohemia; fragment of a long-house consisting of the south-west corner with post-holes and a bedding trench which possibly went all round the house. (Knor, 1953, 589-593).

D) East Germany (Saxony and Thuringia) -- there are three sites with houses; a feature especially common in this region is the double row of post-holes representing the walls:

a) Dresden (Nickern) on the R. Elbe, S. Saxony. A recently excavated site of the early period of the Linear Pottery culture. (Baumann, 1960, 95-138)

b) Dresden (Prohlis), on the R. Elbe, S. Saxony. Two houses with a double row of post-holes for the wall. (Stieren, 1951, 77; Sangmeister, 1951, 91).

c) Zwenkau (Harth), nr. Leipzig; the phases of the settlement representing the later part of the Linear Pottery culture have produced at least 5 houses, with bedding trenches at one end. (Stieren, 1951, 72; Tackenberg, 1937, 217-220; Quitta, 1958, 177-179; Tichý, 1962, 254).

E) West Germany -- the majority of the sites which have produced evidence for surface structures have been described by Stieren and Sangmeister (1951, 61-88, 89-109); therefore, only those which have been excavated recently will be mentioned here in any detail.

i) Westfalen: 3 sites all described by Stieren:

a) Duderstadt nr. Hannover. 1 house 12x9m. with walls represented by a double row of post-holes. (Stieren, 1951, 73-74; fig.5 no. 12).

b) Göttingen (Springmühle)s. of Hannover. Fragment of a long-house (Stieren, 1951, 78, fig. 5 no. 14).

c) Rosdorf (Rasemühle)nr. Göttingen. Fragments of several houses. (Stieren, 1951, 78; Sangmeister, 1951, 100, 103).

ii) Hessen: the area on the east bank of the middle Rhine contains 12 sites all of which have been described by Sangmeister and Stieren:

a) Arnsbach, nr. Kassel. At least 15 houses which Sangmeister has divided into two groups on a basis of their orientation (Sangmeister, 1951, 90, 92; 1937, 213-217). Some have bedding trenches at one end, but the houses are on the whole in a bad state of preservation.

b) Bochum (Hiltrop), Kr. Munster. At least 3 houses, one of which is only a fragment; the other two are 7m. wide and 12m. and 27.50 m. long, with a double row of post-holes along the walls, and a bedding trench at the northern end. (Stieren, 1951, 61-69).

c) Bracht nr. Marburg. House 4x15m. with a bedding trench at the northern end. (Stieren, 1951, 72-73).

d) Butzbach (Griedel)nr. Friedburg. A similar situation was discovered here to that described above at Florești (Passek and Chernush, 1963, 23-25). The post-holes of a surface structure had disappeared completely, leaving a group of long pits around a space approximately 8-10x25-30m. (Stieren, 1951, 75; Sangmeister, 1950, 5-20).

e) Daseburg, Kr. Warburg. A house with a bedding trench all round. (Stieren, 1951, 71, fig.5 no.2).

- f) Emsdorf, Kr. Marburg. Fragments of buildings. (Stieren, 1951, 77).
- g) Frankfurt (2 sites). Fragments of buildings, (Stieren, 1951, 78).
- h) Gudensberg nr. Fritzlar. Approximately 10 houses, mostly fragmentary; the best example has a bedding trench all round, and conglomerations of post-holes at its southern end. (Stieren, 1951, 73, 78; Sangmeister, 1951, 93-94).
- i) Harleshausen, Kr. Kassel. Fragments of post-holes and a bedding trench. (Stieren, 1951, 78).
- j) Mardorf, Kr. Marburg. Fragments of houses, including a bedding trench. (Stieren, 1951, 78).
- k) Niedervellmar, nr. Kassel. Fragments of 4 or 5 houses. (Stieren, 1951, 78; Sangmeister, 1951, 101, 103).
- l) Oberzwehren, nr. Kassel. Fragments of a building. (Stieren, 1951, 78).
- iii) Rheinland: on the west bank of the Rhine, there are 7 sites with evidence of surface structures, all, except one, of which are described by Stieren and Sangmeister.
- a) Gering, Kr. Mayen. At least two houses with bedding trenches at their northern ends. (Stieren, 1951, 76).
- b) Köln (Lindenthal). At least 50 rectangular surface structures, arranged in two main settlements. Re-settled a number of times; Sangmeister calculated 7 times on a basis of the orientation of the houses; many of the houses have bedding trenches at their northern end, and some have a bedding trench all round. The conglomeration of post-holes at the southern end of the houses and the Y configuration of post-holes in the middle of houses also occurs but by no means universally. It is obvious also from the range of pottery at Köln (Lindenthal) that the settlement covers a comparatively long period of the Linear Pottery culture in W. Germany. Both the northern and the southern settlements were surrounded by a



shallow ditch. (Buttler and Haberey, 1936, 73-84; Stieren, 1951, 70-71; Sangmeister, 1951, 98-99).

e) Köln (Mungersdorf). Fragments of 4 houses (Stieren, 1951, 78; Redlich, 1940, 69).

d) Müddersheim, nr. Köln. This site from the later part of the Linear Pottery culture has recently been excavated and published; 13 long-houses, from 10 m. to 33 m. long, and 4.78 m. to 6.55 m. wide. 6 have a bedding trench at the northern end; the conglomeration of post-holes at the southern end and the Y configuration in the middle occurs only very rarely. (Schietzel, 1965, 11-19).

e) Polch, kr. Mayen. Fragments of 2 long-houses with bedding trenches at their northern end and possibly all round (Stieren, 1951, 76-77).

f) Rödingen Kr. Jülich. Fragments of houses (Stieren, 1951, 78).

g) Sarmsheim, Kr. Kreuznach. Fragments of small rectangular houses and the north-west part of a long house with a bedding trench (Stieren, 1951, 78-79).

iv) Bavaria; in south-central Germany, 2 of the sites have produced evidence of surface structures, both of which have been described by Stieren and Sangmeister.

a) Herkheim, Kr. Nordlingen. Approximately 15 houses have been excavated, mostly fragmentary; at least 4 have bedding trenches at their northern end (Stieren, 1951, 72; Sangmeister, 1951, 95-6; Dehn, 1950, 1-5; Frickhinger, 1932, 187-190; 1933, 181-185).

b) Nahermmingen, Kr. Nordlingen. Fragment of a long-house with a bedding trench. (Stieren, 1951, 78).

F) Holland -- 3 of the Linear Pottery settlements in Dutch Limburg have recently been systematically excavated, and a large number of house plans. These

have been analysed and an earlier and later type have been distinguished, known as the Geleen and Elsloo types respectively (Waterbolk and Modderman, 1958-59, 163-171).

a) Elsloo; in the excavation of 1950 the fragments of three long-houses were discovered; only one had traces of a bedding trench at its northern end; otherwise the ground plans consisted of simple rows of post-holes without any conglomerations at the southern end or Y configuration in the middle. The pottery shows that the settlement should be dated to a later phase of the Linear Pottery culture. (Modderman, 1950, 4; 1958-59, 29; Stieren, 1951, 73).

b) Geleen; 5 long houses have been excavated from 26 - 35.5 m. long, and 5.60 - 6.55 m. broad. All are divided into a northern part with bedding trench, middle part with Y configuration of post-holes, and southern part with conglomeration of post-holes. There are also 3 shorter houses. The pottery from Geleen shows that the site represents the first period of settlement by communities with the Linear Pottery culture in Holland and N.W. Germany. (Bursch, 1937, 5-6; Waterbolk, 1958-59, 124-133).

c) Sittard: 46 ground plans of long houses, of which 22 are complete, have been excavated; at least 16 are of the Geleen type with the tripartite arrangement of the interior. The pottery shows that the settlement of Sittard must be of several phases, as does the horizontal and vertical position of the houses. Thus there are phases of settlement which represent both earlier and later periods of the Linear Pottery culture in this western province, but exactly how many phases of re-settlement has not yet been established (Modderman, 1958-59, 39-75).

#### 6) A typical houses in the Linear Pottery settlements

There are two areas of the Linear Pottery culture where this very distinctive house plan of five long rows of post-holes with pits each side does not occur. These

are the upper and middle Dniester basin in the W. Ukraine and Moldavian SSRs and N.E. Rumania, and the south-east part of Hungary. Both these areas represent an expansion of the communities with the Linear Pottery culture into regions already occupied by a neolithic farming population with the Moldavian Criș and Körös culture respectively, and into regions which are ecologically on the periphery of the Temperate Europe loess woodlands.

A) Dniester and Prut Basins -- As mentioned above, long pits were found in parallel lines 6 - 8 m. apart at Florești, on a tributary of the Dniester in the Moldavian SSR; they were interpreted by their excavator as "pit-dwellings", but it is possible that they may be "building pits" with a long rectangular surface dwelling in between, which has now disappeared (Passek, 1962, 131, Passek and Chernush, 1963, 23-26). Similar so-called "pit-dwellings" have been excavated at Kotovane, the Linear Pottery settlement highest up the Dniester and nearest to Poland. Here, there were two long pits, oriented NW-SE (Svešnikov, 1954, 112-119; Passek and Chernush, 1963, 13-14; Comșa, 1959a, 45).

At Torskoye also in the Ukraine SSR. on the Dniester river, at least 3 pits were excavated oriented north-south and approximately 8m. apart. (Antoniewicz, 1921; Passek and Chernush, 1963, 21-22).

The only positive evidence for surface structures from the Linear Pottery settlements of this area comes from Nezviska and Glăvănești Vechi.

Nezviska on the upper Dniester in the N.W. Ukraine SSR has recently been systematically excavated, and produced evidence of two surface houses of the Linear Pottery culture, stratified under houses of the middle Tripolye culture. The distinctive house plan of the Tripolye culture houses consists of long rectangular buildings with their floors made of baked clay over wooden logs (ploščadki) still preserved. It is possible to see from the number of hearths, etc.,

that the houses were internally divided into nuclear family rooms. (Chernush, 1962, 28-32). It has been accepted for a long time that this form of house along with the other cultural facets of the Tripolye culture came to the Ukraine not only from Rumanian Moldavia, but beyond that, from the region south of the Danube delta (e.g., Dumitrescu, 1964a, 1-40).

This whole problem will be discussed in much greater detail in a later chapter, but it is interesting at this point to note that the two surface houses (XIII and XXV) at Nezviska both have the remains of baked clay floors; house XIII, which is rather better preserved, consists of 3 post-holes which possibly represent a long rectangular building, oriented NW - SE, approximately 12x7m. In the hypothetical interior of the house there were two hearths, one at the northern end and one in the middle; these were of clay placed directly on the floor of the house. Thus in the Ukraine it seems that the dimensions and shapes of the more typical Linear Pottery houses were retained, but the floors and walls were made of a much heavier, more solid construction so that their interior furniture and arrangement, showing more than one hearth in a house, were preserved. (Chernush, 1962, 12-13, 18-19; Passek and Chernush, 1963, 14-15; Comşa, 1959a, 45).

Glăvăneşti Vechi on the R. Jijia, has provided the only evidence from the N.E. Rumanian Linear Pottery settlements for surface structures; but the evidence is very meagre consisting of odd post-holes and loose baked clay from the walls and a hearth in possible association with these; as Comşa points out, it is necessary to systematically excavate large areas of a settlement before any ground-plans of surface structures may become clear. (Comşa, 1959a, 45-46).

B) South-east Hungary \* There are at least 7 sites of the later phase of the Linear Pottery culture in this region which have produced positive evidence of surface structures. The early phase of the Linear Pottery culture is hardly



represented south of the Körös river, since this region had been settled by contemporary communities, represented by the Koros culture, who differ only in a degree of poverty from the early agriculturalists south and east of them; their basic cultural features including house-types, as we have seen, are the same as those of the Starčevo and Karanovo I cultures.

However, as will be shown in a later chapter, as the Linear Pottery culture, north of the Körös river in the Great Hungarian culture, developed and the population increased and the soil was exhausted, a certain amount of expansion took place. The main expansion was to the north and west, but a certain amount of expansion took place along the Tisza towards the Maros and Danube rivers, where local groups of the later phase of the Linear Pottery cultures developed. The southern group which has strong elements of the Vinča culture is known as Szalkahát-Lebő; the south-eastern group is known as Gorzsa; the group whose settlements are based on the middle course of the Tisza river are known as the Tisza I culture or group.

The features which all these local variants share in common are the material culture which represents a specialised development from the early Linear Pottery culture; the economy with a high percentage of domestic cattle but also a high proportion of wild animal bones, which represents a mixture of the Körös culture and more typical Temperate European Linear Pottery culture economic patterns; and lastly the house type which represents a continuation of the tradition of small nuclear family houses of the Körös, Starčevo and Karanovo I cultures. The houses are rectangular with an average width of 4m. and length from 6 to 10 m. The walls were of wattle and daub on a light wooden framework, often with decoration; the floors were occasionally mud-plastered, and a hearth inside the house was a very

common feature.

i) Lower Tisza basin

a) Dévaványa (Berekhalom), reg. Gyoma, co, Békés representing the Gorzsa group, which is also known as the D<sup>é</sup>vaványa group. The site was excavated in 1959 when the foundations of two houses were uncovered; both were small rectangular structures, represented by post-holes and a mass of baked clay with impressions of wattle. (Korek, 1960, 43; 1961, 9-24).

b) Gorzsa (Cukor tanya), co. Csongrad, nr. Hódmezővásárhely. The site was excavated especially in 1956 when the foundations of several houses, unfortunately none of them complete, were uncovered. At least one of the houses had in its interior a round hearth/oven built of clay. (Gazdapusztai, 1963, 21-46).

c) Hodoni (Pociorane), reg. Timișoara, Rumanian Banat. The site was excavated in 1959 and is still unpublished. (Material in Timișoara Museum). Several rectangular houses were excavated, with average dimensions of 10x4m; the houses were built of thick clay walls on thin branches.

d) Kökénydomb (Kapocs, Kovacs and Vörös tanyai) nr. Hódmezővásárhely, co. Csongrad. The site, excavated in 1928, and again in 1940, and 1941 has produced some of the best preserved examples of house plans for the Linear Pottery culture of this region. Two stratified levels are discernable in the settlement, with a house (I) stratified above a pit (9) and a hearth (8) (Banner, 1951, 27-36). House I excavated in 1941 is typical of the Kokenydomb houses, being rectangular, 9.50m.x2.80m., with the walls made of wattle and daub, and the floor showing evidence of repeated plastering. In 1940 and 1941 3 houses were excavated; in 1928, 6 rectangular houses were excavated, two of which were complete (Houses 1 and 2), with

dimensions of 2.75x6.10m., and 3.40x7.25 m. (Banner, 1931a, 116-119). 4 of the houses had hearths inside, (1,2,4, and 5) generally in one corner of the house, and of a square shape (1 m. square), built of clay.

At one of the short ends of House 2, two pieces of baked clay were excavated which have been interpreted as decorations for the gable-end of a house, similar to that on the Körös culture house-model from Röske (Ludvár) (with O. Trogmayer in Szeged Museum). Also, several pieces of wall-plaster decorated with incised meanders have been recovered. (Banner, 1940, 35; 1930b, 122-123).

The houses have been interpreted as small tent-like structures consisting only of a gabled roof without separate walls. (Banner, 1929, 115-131; 1930a, 184-193; 1943, 1-26).

The two periods at Kökenydomb represent the earlier and later phases of the Tisza culture, that is the middle and late phases of the Linear Pottery culture in S.E. Hungary. House I of the 1941 excavations has been shown to belong to the Tisza II phase, and, from the sections of the 1921 excavations, and the pottery recovered from the houses, it is probable that the other houses at Kökenydomb also belong to this latest phase of the Linear Pottery culture.

e) Lebő was an island on the lower Tisza, nr. Szeged.

Settlement C was excavated in 1956; it is a stratified settlement, its lower layer representing the Szakalhat-Lebő group of the middle phase of the Linear Pottery culture in this region; three rectangular houses were excavated, of which House 1 was stratified above House 2; most of the evidence for the house plans was from the areas of baked clay with branch impressions; there were only very sporadic post-holes. (Trogmayer, 1957, 23-34).

Settlement B was excavated in 1950 when the foundations of 5 houses belonging to the late Linear Pottery culture (Tisza II) were found. The houses are rectangular, (22.4, 10.2, 11.20, and 18 squ.m.), consisting of wattle and daub walls with no traces of post-holes; the floor of one of the houses (I) was also plastered. There was a round hearth in each house, and it was usual for the area of the floor round this to be plastered. (Korek, 1958, 132-155).

## ii) Middle Tisza basin

a) Szegvár (Túzköves), nr. Szentés, on the R. Tisza. The site has been excavated in the last few years by J. Csalog (Material in Szentés Museum). The settlement is from the middle phase of the Linear Pottery culture (Tisza I culture). Several surface houses have been excavated, but House H is perhaps the most interesting; it was a small rectangular structure, which has been reconstructed in the same way as those from Kökénydomb; at one of the short ends was the clay head of an animal approximately 12cm. long which may perhaps be interpreted as the gable-head decoration of the house, as seen in House 2 at Kökénydomb and in the house model from Röske (Ludvár).

There is no other positive evidence for surface structures from the Linear Pottery sites of this region. Several sites have produced evidence for large round hearths:

Törökszentmiklós, nr. Szolnok. Possible hearth 120 cm. diameter (Korek, 1960, 23)  
Tóciópart (Bleuerföld) nr. Debrecen. 2 hearths, 350x150 cm. and 170x80 cm. (Korek, 1960, 35).

## Summary

The evidence for the house-types and settlements of the Linear Pottery culture comes mostly from the middle and later phases of the culture, especially in the western province in W. Germany and Holland. The only evidence for houses of



the early period of the cultures is from Mohelnice in Moravia, Bylany in Bohemia, Dresden (Nickern) in E. Germany, Duderstadt in W. Germany and Geleen and to a certain extent Sittard in Holland. There is little evidence that the houses of this phase were very different from those of the succeeding phase except in the western province, especially Holland, where houses of the earlier period (Geleen type) were equipped with a bedding trench at the northern end, a raised floor at the southern end and a wide space marked by a Y-configuration of post-holes in the middle, whereas in the later phase the houses (Elsloo type) were mostly without these elaborations and consisted simply of five rows of post-holes; in Bohemia, also, a disappearance of the post-holes marking an upper floor at the southern end can be seen in the houses of the later period, but the Y-configuration of post-holes in the middle is never evident, and the bedding trench at the northern end occurs in houses of all periods.

The elaborate building features of bedding trenches at the northern end or all round, double rows of post-holes on the outer walls, conglomeration of post-holes at the southern end occur especially in the houses of the western province, and to a certain extent in Bohemia and Saxony. Their function, apart from the conglomeration of post-holes at the southern end, must have been associated with strengthening the walls of the houses against the prevailing winds since most of the bedding trenches occur at the north or north-western end; a bedding trench provides a suitable foundation for a more or less solid wall of vertical beams.

In Moravia the houses, although mostly fragmentary, are predominantly represented by five simple rows of post-holes without any bedding trenches. However, some of the houses, including at least 4 at Mohelnice, have a feature which is, so far, unique to this region; this consists of a bedding trench outside and parallel

to each of the long walls, approximately 2m. long.

So far there is no evidence for surface structures of the Linear Pottery culture type from any of the settlements in Hungary; nor is there any evidence from the Linear Pottery settlements of S. Poland, although there are later long houses similar to the post-Linear Pottery culture houses in Bohemia and E. Germany. There is possible evidence for surface structures from one or two of the Linear Pottery settlements of the Ukraine and Moldavian SSRs, such as Florești, where the original floor surface has been eroded away, but the building pits, interpreted as pit-dwellings, remain. In this region also there is evidence for surface structures of the Linear Pottery culture where the original floor surface formed of baked clay remains, with more than one hearth in each house, e.g. at Nezviska.

The settlements of the middle phase of the Linear Pottery culture in the middle and lower courses of the Tisza valley, where influence from the preceding Koros culture and contemporary Vinča-Tordoș culture was strong, have houses which are related much more to the traditions of the "tell" settlements of south-east Europe, than to the Linear Pottery cultures of temperate Central Europe; these consist of small rectangular nuclear family houses, built of wattle and daub on a light wooden framework.

This brings us to the question of how the long-houses of the Linear Pottery cultures should be interpreted. One theory, based especially on the houses where the tripartite form of the interior is clearest (Holland), is that the long houses continue the nuclear family tradition, with the rest of the space in the house being taken up with housing for animals and grain-storage; the other theory suggests that the long houses represent the living-quarters of an extended family: that is, two or three nuclear families, and, using the later houses of Postoloprty

and the Tripolye/Cucuteni culture (and presumably now Nezviska) as analogies it seems probable that each nuclear family had its own room and own hearth in the long-house.

The basic features which all the houses of the Linear Pottery cultures have in common, are the five rows of post-holes (excluding for the moment the elaborating features of bedding-trenches etc.), an almost constant width between 5.5 - 7 m. and an orientation which varies very little from NW-SE through N-S to NNE-SSW. The longest houses are the two over 40m. in Bohemia. The length of the long-houses varies from 45m. to 10 m., but the average length is approximately 22m. Below 10 m. long, the houses are not exactly the same in function as the true long houses, and only seem to occur in certain phases of the Linear Pottery culture.

and the idea is essentially hypothetical, the scope of the discussion is necessarily limited. The proof for the temporary nature of the settlements and the actual length of their duration may be found in the lack of deep stratification of the settlements of the Linear Pottery cultures and the evidence provided by the storage pits, as seen especially at the site of Jyřany in Czechoslovakia.

The lack of deep stratification in the settlements, may be due, as is the lack of any preserved floor surface, to the highly erodible properties of the loess soils. However, at such sites where the floor surface of a house has been preserved, the habitation layer of the Linear Pottery settlements is still very thin compared with that of the earlier, contemporary and later agricultural settlements of south-east Europe. For example at Nezviska on the upper Dniester in the Ukraine SSR, which is one of the few sites where the Linear Pottery culture settlement is found in stratified context with houses from the middle Tripolye culture above, the Linear Pottery culture layer is only 42-50 cm. thick, compared with the average 60 cm. thickness of the later Tripolye culture layer (Gerasimov,

## Chapter II

### The Economic Pattern of Semi-Shifting and Cyclic Agriculture.

The economy associated with the Linear Pottery cultures has been discussed in Part I in relation to the animal bone and plant evidence, since this shows that the economy is basically an expansion of that practised in south-east Europe. In this chapter, however, the aspects of the economy will be discussed, in which the Linear Pottery cultures of Central Temperate Europe differ markedly from the untities of south-east Europe; this is the mobile unstable nature of the type of agriculture practised, and the semi-shifting or cyclic settlement pattern which it produced.

Since the positive evidence for this type of economic pattern is small and the idea is essentially hypothetical, the scope of the discussion is necessarily limited. The proof for the temporary nature of the settlements and the actual length of their duration may be found in the lack of deep stratification of the settlements of the Linear Pottery cultures and the evidence provided by the storage pits, as seen especially at the site of Bylany in Czechoslovakia.

The lack of deep stratification in the settlements, may be due, as is the lack of any preserved floor surface, to the highly erodable properties of the loess soils. However, at such sites where the floor surface of a house has been preserved, the habitation layer of the Linear Pottery settlements is still very thin compared with that of the earlier, contemporary and later agricultural settlements of south-east Europe. For example at Nezviska on the upper Dniester in the Ukraine SSR. which is one of the few sites where the Linear Pottery culture settlement is found in stratified context with houses from the middle Tripolye culture above, the Linear Pottery culture layer is only 12-30 cm. thick, compared with the average 60 cm. thickness of the later Tripolye culture layer (Chernush,



1962, 19). The interesting stratification at Floresti in the Moldavian SSR. is not valid in this instance, since, as mentioned in the previous chapter, there is evidence for a large-scale erosion of the original surface of the Linear Pottery settlement. (Passek and Chernush, 1963, 23-26).

The stratification at Perieni in N.E. Rumania, shows a thin layer representing the Linear Pottery settlement, but with none of the original floor surface preserved, above a thick layer representing a Cris<sub>3</sub> culture pit (Petrescu-Dîmbovița, 1957, 65; 1959, 60-66). The site of Perieni is therefore not valid for proving the temporary nature of the Linear Pottery settlements.

These are the only Linear Pottery sites where there is a direct stratified relationship with the more stable settlements of the early neolithic cultures of south-east Europe. Other sites of the Linear Pottery culture where the original floor surface of the houses has been preserved include those of the middle and later phases of the Linear Pottery culture in south-east Hungary (Tisza, Szakalhat-Lebő, and Gorzsa groups).

At Gorzsa, nr. Hódmezővásárhely, the culture layer was 25 cm. thick with the surface of a house 11 cm. deep in this (Gazdapusztai, 1963, 27). The culture layer at Kökenydomb had a similar average thickness of 25 cm. with the house surfaces at a depth of between 9 and 12 cm. in this layer. (Banner, 1931a, 55 and 114).

The settlements of the Körös culture, although not forming "tells", that is, artificial mounds built up by the deposits of house rubble and domestic rubbish, generally have comparatively thick culture layers, which must be an indication of the relative stability offered by an economy based on successful fishing with agriculture. The culture layer of Mároslele (Pána) is 30-60 cm. thick,

(Trogmayer, 1964, 67). The culture layer of the Starčevo-Körös settlement of Obrež (Baštine), N. Yugoslavia, with a similar economy to that of the S.E. Hungarian Körös settlements, is 50-78 cm. thick (Brukner, 1960, 81). In the Criș settlement at Leț (Varhegy), nr. Sf. Gheorghe, E, Transilvania, central Rumania, the culture layer is at least 50-100 cm. thick. (Zaharia, 1962,6).

In the "tell" settlements of the Karanovo I and Starčevo cultures, the culture layer is formed by deposits of wattle and daub from collapsed houses, so that it rises above the present surface of the ground into a mound. This is especially the case of the settlements where material from more than one culture appears, representing continuous settlement on one site for over 1500 years. There is no proof, as yet, that the settlement of these tells was in fact continuous; it is possible that they, like the settlements of the Linear Pottery cultures, were abandoned after a short period to be re-settled one or two generations later. Until a statistical analysis of the pottery from the tell settlements of Bulgaria and Yugoslavia has been made, on the lines of that made from the pottery of the Linear Pottery settlements, it will not be possible to ascertain whether certain styles of decoration etc. were developed in only a few settlements, and others on different settlements; or whether there was a universal development of the styles, so that all the methods and fashions of decorating pottery which might occur on a site, could have been developed from beginning to end on that site; it is with this hypothesis in mind that the theory of cyclic agriculture has been developed, concerning the Linear Pottery culture settlements. (Soudský, 1962, 196).

It is possible to see, at least, that the culture layers of the Starcevo and Karanovo I tell settlements are very much thicker than those of

the settlements of Temperate Central Europe. The great thickness is due not only to the larger amount of wattle and daub rubble from collapsed houses, but also to greater deposits of domestic rubbish. Whether these phenomena are to be interpreted as proof merely of a different climate and building methods in this region, or whether a higher technique of food-production and greater stability of settlement is also involved, is still open to question, but surely all these factors have contributed to the formation of "tell" settlements.

At Karanovo, nr. Nova Zagora, S. Bulgaria, the early neolithic culture layers (I/II) were approximately 2.76 m. thick; the layer representing the Veselinovo culture (III) was 1.08 m. thick; the late neolithic layers representing the Maritsa (Boian) culture (IV/V) were 2.70 m. thick, and the eneolithic Gumelnița culture layer (VI) was approximately 3.60 m. thick. (Georgiev, 1961, 49). In the layers I/II, 5 house levels may be distinguished; in the late neolithic/eneolithic layers (V/VI), there are more than 16 building levels. The only obvious break in settlement comes between layers II and III, where there is a sterile deposit; a similar phenomenon has been recognised on other sites in south Bulgaria at the same time. Apart from this there is no break in settlement or cultural development. (Georgiev, 1961, 52-53).

At the tell settlement of Gornja Tuzla, Bosnia, W.C. Yugoslavia, the culture layer representing the Starčevo culture (VI) is 55 cm. thick, with at least 2 building levels. (Čović, 1961, 81).

It is obvious that the evidence of vertical stratigraphy is an important factor in calculating the duration of settlements and making chronological classifications of the archaeological material of the sites of south-east Europe. However, in temperate Central Europe, since the settlements of the Linear Pottery

culture are hardly ever represented by a culture layer, and never have more than one superimposed building level on another, other methods have been developed for the calculation of the duration of settlement and the classification of material.

These methods may best be explained by taking as an example the site of Bylany in Czechoslovakia, where they have been developed and used on a large scale.

From a study of the pottery of the Linear Pottery settlements of Czechoslovakia, Germany etc. a chronological classification based on four (Soudský, 1954, 75-104; 1956, 408-412) or five phases (Neustupný, 1956, 386-407; Quitta, 1960, 181) has been made and applied to the Linear Pottery material of central Europe. Using this classification as a basis, the decorative styles on the pottery at Bylany have been broken down to their details so that a statistical analysis may be made; in this way, the percentage of each style and sub-style in each pit has been calculated, so that the pits and their associated houses could be divided into a series of chronological phases. Each phase represents re-settlement after an interval of a number of years, since the analysis has shown that there is no simple continuous development from phase to phase; the pottery styles indicate that intermediate stages of development must have taken place outside the settlement of Bylany (Soudský, 1962, 194-196; 1960, 14-35). By this method, 14 phases of re-settlement by communities, represented by material of the Linear Pottery culture have so far been distinguished (Soudský, in discussion at Bylany, April, 1965).

Other methods of distinguishing phases include variations in the orientation of long-houses (Sangmeister, 1951, 89-109), which was discussed in



the previous chapter; also vertical and horizontal stratigraphy applied to the relative position of superimposed houses and pits.

The disadvantages of the method of distinguishing phases by the orientation method have been discussed; i.e., that it is unreliable in that the variation is generally very slight, sometimes an angle of only  $3^{\circ}$ , and that the method by a statistical analysis of the pottery has shown that not all houses of the same period have exactly the same orientation. As Soudský points out, apart from exceptional cases the evidence provided by the relative horizontal position of pits and houses is limited to negative evidence: it is possible to say that two houses could not have been co-existent, but usually it is not possible to say which house is earlier; it is also difficult to build up a complete picture of the phases of a settlement only from horizontal stratigraphy, since the relative chronology involved can only be applied to two phases at one time. (Soudský, 1962, 193; 1960, 15).

Vertical stratigraphy in Linear Pottery settlements provides the same kind of limited evidence, except that it is not so negative; it is possible to see which pit or house is older than another. The classic instance at Bylany when vertical stratigraphy is the most important source of evidence, is in the question of the duration of each phase of settlement.

Between the houses and pits or sometimes inside them, at Bylany, and in other sites of the Linear Pottery culture, a number of storage pits were excavated, especially associated with houses of the later periods of the culture. The pits are deep, often one metre, with steep sides compared to those of the building-pits; they have been interpreted as pits for storing grain, probably grain for planting, since they seem to have been burned annually and re-lined with

clay. By observing the total number of burnt and re-lining layers in a single pit it was calculated that the pits were used for an average of 10 years, and one or two, interpreted as supplementary pits, for 5 years. If one of the pits represents the grain storage for a house for one of the phases of settlement, it is probable that the average duration of a phase was 10 years. (Soudský, 1962, 198-9). It would be interesting to check, by experiment, whether chernozem would become so exhausted after 10 years successive clearing and burning that the yield of grain it produced would not be enough to support a village of 10 or more households.

The process of shifting settlements and the expansion of the communities with the Linear Pottery cultures has been the subject of many lyrical descriptions of early colonists pioneering the loess woodland and establishing small settlements, and of others behind them being compelled to penetrate even further; as the soil became exhausted the earlier colonists overtook the later ones, and so they continued in a continuous spiral ever westwards, northwards and eastwards in the search for fresh land, but always limited by their need for woodland and light, dry and fertile soil. (Cornwall, 1965, )

This process may certainly be true of the earliest period of expansion and development of the Linear Pottery culture, but, from the evidence of the statistical analysis of pottery from Bylany, it seems possible that, as the culture developed, the techniques of food-production also progressed and the process of shifting settlements became rather less haphazard. The hypothesis of "cyclic settlements" or "cyclic agriculture" has been developed on a basis of the material at Bylany, since it is only at this site that such a large area of settlement has been systematically excavated, and where large-scale reconnaissance

has been carried out in the surrounding region.

By these trial excavations, over 2000 building pits have been discovered, and many have been excavated; the pits are concentrated in 7 or 8 centres, of which one is the centre at Bylany; the settlements are arranged in a rough circle with the small river Bylanka running through the middle. The new settlements include one known as "T", where not only are there different percentages of the typical styles of pottery decoration (from those at Bylany), but there are also stages in the development of these styles which have never been found at Bylany (Discussion with Soudský at Bylany, March/April 1965). The hypothesis of Soudský proposes that, at least at Bylany, and probably in other centres, the direction of movement of settlement every 10-15 years was not haphazard but was in a traditional pattern from one settlement to another in the cycle. If there are 14 phases of re-settlement of the communities with the Linear Pottery culture, and it took roughly 60-80 years for the community to complete the cycle, the duration of the Linear Pottery culture in Bohemia (since the earliest and latest stages of development are represented at Bylany) might be expected to be approximately 1100 years. (Soudský, 1962, 199-200).

It is not yet possible to check this hypothesis with evidence from any other Linear Pottery settlements, since no other research has been carried out on such a large scale. However, the order of the phases and certain of the gaps in settlement have been supported by evidence from an analysis of samples taken from ovens and baked clay from the walls for tests for variations in the intensity (rather than direction) of the magnetic field. (The tests were taken at Bylany in summer 1964).

To summarise this economic pattern developed especially by the communities

with the Linear Pottery culture in Temperate Europe, we may say that the settlements were temporary, lasting only 10-15 years, due to the nature of the soils on the loess and the methods of cultivating them. The method of cultivation must have been basically clearing small areas by burning, and planting crops among the tree stumps in the ash-covered soil, i.e., slash and burn. The positive evidence for cultivation of grain or any crops is very scanty, most coming from rare carbonised grain trapped in the ovens.

The ovens found on the settlements of the Linear Pottery culture are similar to those from sites of the Koros, Karanovo I and Starcevo cultures; they are built on flat slabs of stone, from baked clay, not more than 20 cm. high and app. 60 cm. across; they are more likely to have been used for removing the clinging hull of emmer wheat than merely for drying the grain. (Helbaek, 1960, 100-107).

From this slight evidence, it is still not possible to tell how much of the economy was based on cultivation and how much on keeping domestic animals. Soudsky puts forward the dense woodland as an objection for any intensive cattle-breeding (Soudsky, 1962, 196-197), which would indicate cultivated plants as the main source of food. However, from the evidence of the later Ulmus decline, (Troels-Smith, 1960) and analogies in modern North Norway, cattle thrive on tree fodder as much as grass, and can live quite easily in woodland, or they can be reared in confined stalls. Any discussion on this problem can only be very speculative, when there is a pollen analysis from only one region of Linear Pottery settlement, and that region (the Low Countries) has no animal bone evidence. (van Zeist, 1959, 19-25). It should also be pointed out that results of pollen analysis made in the western periphery of the Linear Pottery culture



region cannot necessarily be applied to the central area of the culture.

There is evidence for re-settlement from a number of sites in all the areas of Linear Pottery culture, such as Bylany (14), Köln (Lindenthal) (7?), Müddersheim (Schietzel, 1965, 124), Sittard (Modderman, 1959, 39-75), Mohelnice, (Tichy, 1962, 250-257), Zwenkau (Quitta, 1958, 177-179) etc. At Bylany a phase has been interpreted, at least in the later period, as a stage in a cycle of 7 or 8 settlements, representing a more advanced economic and settlement pattern; it is possible that this theory may be applied to other centres of settlement of the Linear Pottery culture, but so far no equally large areas have been surveyed.

In this chapter we shall discuss those aspects of the material culture which are typical of the early agricultural settlements of south-east Europe, but which disappear more or less completely in the settlements of the Linear Pottery culture of Temperate Central Europe. These aspects include such sophisticated features as clay female figurines, clay stamp-seals, bone spatulae, etc.

# 1) A comparative study of the distribution of clay female figurine in the settlements of the Linear Pottery cultures, and the Starčevo-Körös-Cris-Tisza I cultures.

A detailed study of the distribution of female figurines of the neolithic and eneolithic cultures of south-east and central Europe has been made, and will shortly be published. Thus it is not proposed here to enumerate or analyse in detail the figurines of the early agricultural settlements of south-east Europe, but only those for which relate to the Linear Pottery culture.

There have been many attempts to make a typology of the figurines of the Starčevo, Starčevo and Körös cultures, as well as those of the contemporary cultures in Greece. These include dividing them into strobiliform, flat, elaborate, and

### CHAPTER III

Disappearance from the material culture of the Linear Pottery settlements of features which are characteristic of the tell settlements of south-east Europe.

In the first part features typical of the material culture of the early agricultural settlements of south-east Europe were discussed which continue to a certain extent in the settlements of the Linear Pottery culture. The subject of the earlier chapters of this part were the features of the material culture, such as house-types and economic pattern which are different in the settlements of the Linear Pottery culture, from those of the Starčevo, Karanovo I and Körös cultures. In this chapter we shall discuss those aspects of the material culture which are typical of the early agricultural settlements of south-east Europe, but which disappear more or less completely in the settlements of the Linear Pottery culture of Temperate Central Europe. These aspects include such sophisticated features as clay female figurines, clay stamp-seals, bone spatulae, etc.

1) A comparative study of the distribution of clay female figurine in the settlements of the Linear Pottery cultures, and the Starčevo-Körös-Cris-Karanovo I cultures.

A detailed study of the distribution of female figurines of the neolithic and eneolithic cultures of south-east and central Europe has been made, and will shortly be published. Thus it is not proposed here to enumerate or analyse in detail the figurines of the early agricultural settlements of south-east Europe, but only those few which relate to the Linear Pottery culture.

There have been many attempts to make a typology of the figurines of the Karanovo, Starčevo and Körös cultures, as well as those of the contemporary cultures in Greece. These include dividing them into steatopygous, flat, elaborate, and

cylindrical groups representing different types of figurine (Kutzian, 1947, 7; Banner, 1932; Garašanin D, 1954, 60-61); some of these types, such as the steatopygous examples have been thought to be later than others such as the cylindrical examples (Garašanin D. 1954, 61). Others have refused to follow any typological methods or to recognise any groups and have preferred to treat each figurine as an individual.

Although, quite naturally, no figurine is identical to another, it seems possible to distinguish a basic similarity between the figurines of these earliest agricultural settlements of south-east Europe. In this region, the figurines of the neolithic and early chalcolithic cultures of Anatolia such as those from Hacilar (Mellart, 1960, 92-104; 1961, 74; 1958, 135-141) and of Greece especially Thessaly and Anatolia appear as the obvious prototypes of the Bulgarian and Yugoslav examples, although they are much more finely made, and are rather more elaborate and realistic.

Compared to these very competent examples, the figurines of the Karanovo I, Starčevo, and Körös cultures appear as primitive, rustic attempts to portray the human figure, and clearly represent a tendency towards greater simplicity in execution and stylisation in design, with increasing provincialism and isolation from the more sophisticated and advanced cultures.

This process may be seen even in Greece if the very elaborate neolithic figurines of Tsangli and Sesklo in Thessaly (Wace and Thompson, 1912, ) are compared with the simpler examples from Nea Nikomedea in Macedonia (Rodden, 1964a, 109). Although it is not admitted that there is any typical figurine at Nea Nikomedea, the best example from the site, which is almost complete, and consists of a fat, almost steatopygous lower part, flat upper part with short straight arms

and a cylindrical head with rough facial features, represents the type which is seen most commonly in the early neolithic settlements of south-east Europe. (Rodden, 1964, Pl. 3a).

In fact, with the recently excavated example of a complete figurine from the Körös culture site of Röske (Ludvár) which is of almost the same shape as the Nea Nikomedeia figurine, but with less detail portrayed (Trogmayer in discussion at Szeged Museum April, 1965), it seems probable that many of the so-called different "types" of figurines are in fact different parts of the body of what is basically the same shape of figurine: the "steatopygous" figurines are the lower part of the body; the flat figurines are the upper part of the body; and the cylindrical figurines are the head (Milogčić, 1949b, 266). There are also figurines which are completely cylindrical, flat or "steatopygous", but these are not nearly as numerous as the fragments.

Of approximately 50 tell settlements of the Karanovo I culture, only 6 are reported to have produced figurines (Georgiev, 1961, 57-65, Fig.3, 1; Gaul, 1948, 27-45; Mikov, 1958, 47-55; Petkov, 1928-29, 185-198). Of these, 4 are in west Bulgaria (Kremenica, Kremicovci, Slatina, Ursol); one is in north-west Bulgaria (Naklata), and one in south Bulgaria (Karanovo). Each site had approximately 1 figurine.

Of the Starčevo sites in Yugoslavia south of the Danube river, 8 sites out of a total of 41 produced figurines, 3 in Macedonia (Markovo, Kale, Zelenikovo, and Vršnik), and 5 in central Serbia (Bubanj, Kavolac, Pavlovac, Tečić, Gladnice) each with one or two figurines (fragments) (Garašanin D, 1954, 34-39; Garašanin M., 1958a, 1-8; Galović, 1964, 1-29).

North of the Danube in the transitional area, there are approximately 31



sites of the Starcevo-Koros culture in North-east Yugoslavia; of these 6 have produced figurines:

In N. Serbia and Vojvodina:

- a) Bogojevo, nr. Odžaci. Anthropomorphic pot (Garašanin D., 1954, 40; Kutzian, 1947, Pl. XIIX: 10)
- b) Monoštor (Opoljenik) nr. Bac. 3 steatopygous lower parts of figurines. (Kutzian, 1947, Pl. XIII: 5,7,8; Garašanin D., 1954,40).
- c) Vinča nr. Belgrade, at the confluence of the rivers Sava and Danube. At least 12 figurines come from depth 9.30-8.0m. and have therefore been assigned to the Starčevo (Körös) culture. (Garašanin, D., 1954, 39; Vasić, 1930-36, III).
- d) Starčevo nr. Pančevo on the north bank of the Danube: 3 figurines including 2 cylindrical heads and 1 almost complete (without a head) -- "Venus of Starčevo". (Garašanin D., 1954, 54-56, Pl. III: 3, 10, Pl. IV:12)
- e) Obrež (Beletinci) nr. Zemun. 1 cylindrical head with eyes and hair portrayed. (Srejšović, 1966, 29, Pl 1-2).

In Croatia:

Sarvaš on the R. Danube. 1 fragment. (Garašanin D., 1954, 45).

In Rumania the Criş culture is represented by approximately 110 sites, but only 4 of these have produced figurines:

In Moldavia:

a) Perieni, nr. Iasi. 3 fragments including 2 "steatopygous" lower parts and one cylindrical head (Petrescu-Dîmboviţa, 1957, 65; 1959, fig. 3)

b) Dîtrîţu in the Ceahlău mountains nr. Piatra Neamţ. 1 "steatopygous" lower part of a figurine (Păunescu, 1958, 265-269)

In the Banat:

Beşenova Veche (hung. Óbessenyő), reg. Timişoara. 7 possible figurines

including 1 cylindrical head, and 1 cylindrical lower part. (Kutzian, 1947, Pl. XLIV: 3-4; Garašanin D., 1954, 58; Milleker, 1938, 103; Nagy, 1911, 147-164)

In Transilvania:

Leț(varhegy) nr. SF. Gheorghe. 1 figurine head, v. similar to early Vinča - Tordoš examples, indicating a late date for Transilvanian Criș (Quitta, 1960, 171, fig. 10:h).

In south-east Hungary there are at least 50 sites of the Körös culture; 13 of these have produced figurines:

a) Osztentivan, on the Yugoslav border. 3 "steatopygous" lower parts of figurines, (Kutzian, 1947, Pl. XLIV: 5, 7; Banner and Parducz, 1948, 19-41).

b) Gorzsa nr. Hódmezővásárhely. Anthropomorphic vase cf. Bogojevo. (Kutzian, 1947, 45; Gazdapusztai, 1957, 3-12).

c) Hamszaritohalom, nr. Hódmezővásárhely. 2 figurines including 1 "steatopygous" lower half. (Kutzian, 1947, 45, Pl. XLIII: 3; Banner, 1940, 28).

d) Kopancs (Kovacs tanya) nr. Hódmezővásárhely. 1 cylindrical head. (Kutzian, 1947, Pl. XLIII: 10; Banner, 1932, 11).

e) Kopancs (Zsoldos tanya), nr. Hódmezővásárhely. 9 figurines including 2 cylindrical columns, 3 cylindrical heads, 2 flat upper parts, and 2 "steatopygous" lower parts. (Kutzian, 1947, Pl. XLIII: 1, 5, 7-9, 11; XLII: 5-6; XLIV: 9).

f) Kotacpart (Váta tanya), nr. Hódmezővásárhely. 3 "steatopygous" lower parts and 1 cylindrical head and 2 conical heads. (Kutzian, 1947, Pl. XLIII: 2, 4; XLIV: 1-2, 8).

g) Sövényhaza, nr. Hódmezővásárhely. 1 flat upper part (Kutzian, 1947, Pl. I: 6).

h) Gyálaret, nr. Szeged. 1 figurine with a conical head and flat upper

part. (unpublished in Szeged Museum).

i) Röszke (Ludvár), nr. Szeged . 1 complete figurine with cylindrical head, flat body, and "steatopygous" lower part; 1 figurine with cylindrical head and flat upper part; 1 cylindrical head; 1 "steatopygous" lower part; 2 cylindrical lower parts. (Excavated by Trogmayer 1964, but unpublished in Szeged Museum).

j) Jaksorérpart, nr. Szentes. 1 cylindrical head, (Kutzian, 1947, Pl. XVII,2).

k) Kúnszentmarton, nr. Szentes. 1 "steatopygous" lower part. (Kutzian, 1947, Pl. XVIII: 12).

l) Tiszaúg (Topart) nr. Szentes. 2 "steatopygous" lower parts (Kutzian, 1947, Pl. VIII: 1-2).

m) Szolnok, on R. Tisza. 1 "steatopygous" lower part. (Kutzian, 1947, Pl. XIII: 7).

It would seem from a superficial glance that the "steatopygous" figurines are the dominant type in the Körös culture, since out of a total of 33 Körös figurines, 14 are of this type; it has even been suggested that because of this, the "steatopygous squatting figurines" were of a later type than the flat figurines with a cylindrical head. (Garašanin D., 1954; 61). However, all 14 of these figurines represent the lower part of the body, as do the 3 examples from Rumania, the 4 examples from north Yugoslavia and 6 examples from Serbia and Macedonia. 3 of these lower parts were attached to flat upper parts of the body, and the complete figurine from Ludvár has already been mentioned.

From the region of the Starčevo culture there is a total of approximately 17 figurines; from the Starčevo/Körös sites in the transitional region (including

Rumanian Banat) there are approximately 30 figurines; and from the sites of the Körös culture there are at least 33 figurines. This would seem to indicate a certain increase in the manufacture of clay female figurines in the early agricultural settlements north of the Danube, although the quality of manufacture and portrayal of the features is very much lower than in the Starčevo and Karanovo I and Sesklo figurines.

However, it is interesting that the increase in quantity appears in the cultures which were immediately adjacent to the Linear Pottery cultures, in which the tradition of making female figurines hardly appears at all.

No clay figurines have been excavated from the sites of the earliest phase of the Linear Pottery culture on the Hungarian Plain (Alföld). Indeed only two figurines have been excavated on the Alföld itself, and these come from the sites of:

a) Zampuszta, nr. Balmazújvaros, co. Hajdú-Bihar; the settlement has produced material from the beginning of the middle phase of the Linear Pottery culture on the Alföld. The figurine resembles some of the early Vinča culture examples in that it has a triangular-faced head, with a small flat body. (Korek, 1960, 32; 1959, 13; Csalog, 1955.228).

b) Újtikos (Tikos Tanya) nr. Debrecen, co. Hajdú-Bihar; the settlement is from the earlier phase of the Linear Pottery Culture. 1 lower part of a figurine decorated with incised lines. (Korek, 1959, 13; 1960, 28).

The largest number of figurines comes from the settlements of the middle and later phase of the Linear Pottery culture in the lower and middle Tisza valley of south-east Hungary and the Yugoslav and Rumanian Banat, in the groups known as Szakalhat-Lebő, Gorzsa, Tisza I and II. Here the influence from the previous Körös/



Criș culture, in the material culture of which clay figurines formed a basic component, was still strong. In addition there was important contact and interrelationships between the Linear pottery culture in this region and the contemporary early phase of the Vinča culture (Vinča-Tordoș), which had its centre in Serbia south of the Danube and to a certain extent north of the Danube (Garašanin M., 1951); in this culture, as will be shown below, the tradition of making clay figurines continued and increased in importance, although the basic form of the figurines was rather different from the figurines of the Karanovo I-Starčevo-Körös cultures. There is a tendency in the Vinča-Tordoș figurines, towards standing figurines with cylindrical bodies, pointed arms, and a triangular face elaborated by incised lines for eyes (Garašanin, 1951, 37-44; Srejšović, 1966 ).

North of the Danube in the Yugoslavia Banat and Vojvodina figurines of this type occur at Aradac, At, Botoș, Vrșac (Mesić Canal), Potporanj, Veliko Središte, Vrșac (Westrand), Novi Bečej (Bordjoș), Vinča and Csoka (Kremenyak). The pottery of these sites is predominantly the typical Vinča-Tordoș black-burnished ware with fine channelling or fluting and coarser ware with incised "winkelband" decoration; among these, however, there are sherds of pottery which is more typical of the Linear Pottery culture sites higher up the Tisza in Hungary; such as the large pot from depth 7.445 m. at Vinča, 1.25 m. high, with close analogies in form and decoration with the large pots with human faces portrayed on them from the Tisza I sites, such as Szegvár (Túszköves) (Vassió, 1930-36 Vol.II, 69; Csallany, 1939, 145-146).

The site of Csoka (Čoka) shows strong elements of the Linear Pottery culture of S.E. Hungary and the figurines are noticeably poorer than those of south Vojvodina. The site lies near the Hungarian border and its material shows more

affinities with that of the sites by Szeged than with Vinča itself. (Garašanin D., 1954, 41; Garašanin M., 1951, 78; Banner, 1960, 1-57).

Novi Bečej is also one of the most northern Vinča-Tordoš sites, and has been classified as representing an expansion of the Tisza culture into Vinča-Tordoš culture territory. (Garašanin M., 1958, 26). Thus the unusual figurine from this site which depicts a sitting figure clutching a bowl is thought to be the result of this expansion (Grbić, 1954, 15). However, the material from Novi Bečej is no more exactly the same as that seen in the Tisza culture sites of the middle Tisza valley than is the material from Csoka, but should be regarded as the result of a mixture of Tisza and Vinča elements, as seen in the sites of the Szakalhat-Lebő group. (Garašanin M., 1950, 19-25; 1951b, 125-132).

North of the Danube, in the Rumanian Banat and Oltenia, the Vinča-Tordoš culture is rather different from the culture as seen in Yugoslavia, and is often referred to simply as the Turdaş culture; again the material shows mixed Vinča and later Linear Pottery elements, especially in the Banat towards the Tisza and Mureş rivers. Even in Oltenia, however, the figurines which are of similar shape to those of the Vinča-Tordoš culture in Yugoslavia are decorated in a similar way to the pottery of the later Linear Pottery cultures along the Tisza and the Great Hungarian plain, including incised meanders; examples of these are the figurines from Ostrovul Corbului, Verbița and Rast. (Berciu, 1961a, 35-44).

The 13 figurines from Zorlențul Mare (Unpublished in Timișoara Museum) and 6 figurines from Parța (Berciu, 1961a, 43; Miloia, 1931, 183), both in the Rumanian Banat, do not include any with Linear Pottery decoration, but the associated pottery includes many examples with analogies in Szakalhat and Lebő. A similar situation may be seen at Turdaş on the Mureş, (Roska, 1941, 318-324).

The Linear Pottery element in the material culture increases north and westwards towards the Tisza river until it becomes dominant. North of the Maros river the Vinča-Tordoš element tends to disappear, although the sporadic figurines which occur on the Linear Pottery sites closely resemble those of the Vinča-Tordoš culture.

Among the sites centred round the confluence of the Tisza and Maros rivers between Szeged and Hódmezővásárhely 5 have produced figurines:

a) Kopancs (Kiss tanya), nr. Hódmezővásárhely. 1 figurine. (Banner, 1933b, 30-43, Pl. I-IX; 1942, Pl. LXXI:4).

b) Kőkenyődomb, nr. Hódmezővásárhely. 1 figurine with a triangular head, flat body and short straight arms. There are also the two famous objects which have been variously described as "hollow figurines", "altar figurines", and "anthropomorphic pots"; these were found together lying on the floor of a house where they had obviously fallen from the standing position. The pottery associated with them in the house was of the later Linear Pottery culture in this region, when a uniform style of close meander decoration had spread down to the Lower Tisza from the middle course of the river (Tisza II) (Banner and Korek, 1949, 7-25; Banner, 1959, 14-35). The context of the small figurine is not so well documented, so that it is not possible to tell with which phase of the Linear Pottery cultures in this region it is associated.

c) Gorzsa (Cukor tanya) nr. Hódmezővásárhely. 1 figurine from a house was excavated in 1950; it is a roughly ovoid shape, very coarsely made with the facial features hardly depicted (Gazdapusztai, 1963, 22). The figurine is decorated with incised meanders; the associated finds are from the middle-phase of the Linear Pottery culture, known as the Gorzsa group, which is closely related to the Tisza I and Szakalhat-Lebő groups.

d) Szakalhat nr. Hódmezővásárhely. One of the type-sites for the



Szakalhat-Lebo group, or middle phase of the Linear Pottery culture in this region.

3 figurines, including 2 flat upper parts with short arms; the third figurine consists of a flat upper part with short arms and a triangular-faced head with incised decoration on the flat top. (Banner and Balint, 1935, 76-96, Pl. III-XII; Quitta, 1960, 171).

e) Lebo, nr. Szeged. Settlement B which was excavated by Korek in 1950 produced material of the late Linear Pottery culture in this region (Tisza II), including a small flat upper part a figurine with incised decoration. (Korek, 1958, 132-155).

From the sites of the Linear Pottery culture of the middle course of the Danube, where the Vinča culture influence was much less, 2 sites have produced figurines:

a) Szegvár (Túzköves) south of Szentés, on the R. Tisza. This important site from the middle phase of the Linear Pottery culture in this region (Tisza I) is almost totally unpublished. It has produced 3 figurines: 1 rough flat figurine with almost no features portrayed, and 2 "monumental" figurines. The two large figurines are very similar, both depicting figures seated on a stool, and both being entirely sexless, although they have been interpreted as males (Csalog, 1959, 7-38; 1960, 57-68). A similar stool was found accidentally in S.W. Hungary at Paradicsompusztá co. Tólna (Csalog, 1943, 130-134). Only one of the figurines has been published; this is the very unusual example who carries an object, which has been variously interpreted as a hoe, a hafted shoe-last axe/adze, a sword-staff etc, over its shoulder; the position of the figurine in seated position is very similar to that of the Vinča-Pločnik figurines, such as that from Predionica, in C. Yugoslavia. (Galović, 1959, 1-80). The head is one with a simple triangular face with the features roughly portrayed. The unpublished figure is



very similar except that its head is missing and, instead of carrying anything over its shoulder, it is holding both hands in its lap. (Material unpublished in Szentes Museum).

Besides the figurines there are two large pots with long cylindrical necks, and pedestals, and decorated superficially with human features. (Csalog believes that one has a beard!). Both pots lay on the floor of the same house and had originally been covered in ochre except for the pedestal. There are close analogies at Vinča, Szentes, Szentes (Nagyhégy), and Jaksórerpart (Kettőshalom) nr. Szentes (Csallany, 1939, 145-146) and in Kenezló co. Szabolcs, N.E. Hungary, (Tompá, 1929, 41; Korek, 1959, 13; Banner, 1959, 30).

b) Toszeg (Kucorgo) nr. Szolnok. 1 fragment of a flat-bodied figurine (Korek, 1959, 13).

In the eastern province of the Linear Pottery cultures, that is N.E. Hungary, S.E. Slovakia, only two of the sites have produced figurines, both from the transition between the middle and late phases of the Linear Pottery of that region (Pre-classical Bükk 2 (AB 2) /Classical Bükk 1(B 1):

a) Borsod (Derékegyháza) nr. Miskolc. 1 figurine with a flat body and triangular-faced head with nose and eyes represented. (Csalog, 1955, 228; Korek, 1959, 13; Tompa, 1937, 33).

b) Miskolc (Fűtőház). Flat lower part of a figurine decorated on both sides by incised meanders, which, as mentioned above, is a typical decorative form of the Tisza culture further south, but hardly ever occurs on Bükk culture pottery. (Korek, 1959, 13; 1960, 41).

Of the several hundred sites of the central province of the Linear Pottery culture, that is W. Hungary, E. Austria, Moravia, and S.W. Slovakia, only 9 have produced figurines:

a) Medina, co. Tolna nr. Szekszard, W.C. Hungary. This settlement from the early phase of the Linear Pottery culture in this region has produced two fragments of figurines; 1 is a standing figure with a flat upper part and "steatopygous" lower part, with incised lines across the body. (Tompá, 1937, 30; Quitta, 1960, 156, 171).

b) Zalavár nr. Lake Balaton, W.C. Hungary. Two pits representing a settlement of the early phase of the Linear Pottery culture in this region, with a C 14 date of 4230 ± 100 b.c. Bln 87 (Radiocarbon VI, 1964, 316). 1 standing figurine with a comparatively thick flat body and protruding buttocks. (Unpublished in the National Museum, Budapest) (Quitta, 1960, 156-157, 171).

c) Reikersdorf, nr. Eggenburg, reg. Horn, N.E. Austria. 1 cylindrical figurine with a flat head from the middle phase of the Linear Pottery culture (Hrodegh, 1923, 191; Quitta, 1960, 171).

d) Bojanovice, reg. Znojmo, S.W. Moravia. This settlement includes material from the early and middle phases of the Linear Pottery culture. The figurine fragment consisting of a flat topped head with perforations and incised decoration is more likely to come from the middle phase. (Vildomec, 1932, 72; Tichý, 1962, 278).

e) Boskovštejn, reg. Znojmo, S.W. Moravia. Also a settlement of all phases of the Linear Pottery culture, but with little exact documentation of the position of the 3 figurine fragments: 2 are fragments of flat-topped heads, one of which is decorated with "notenkopf" designs; the other is the upper part of an unusual sitting figurine, with the arms curving round away from the body; in fact the figurine is much more reminiscent of the Vinča-Pločnik figurines. (Vildomec, 1932, 72; Tichý, 1962, 278; Quitta, 1960, 171; Palliardi, 1911, 40-51).

f) Markvitz, co. Jena, E. Germany. Settlement site of the middle phase

f) Dvorníky (Patkoš), reg. Zvolen, S.C. Slovakia. Settlement of the middle phase of the Linear Pottery culture in this region (Želiezovce I culture). 1 small figurine, flat body and flat-topped head. (Balaša, 1963, ).

g) Brničko reg. Olomouc, C. Moravia. Settlement site of the middle phase of the Linear Pottery culture. Fragment of thick, flat lower part of figurine. (Unpublished in Olomouc Museum).

h) Mohelnice, n. of Olomouc, N.C. Moravia. The settlement is from all periods of the Linear Pottery culture. There is probably only 1 true example of a clay figurine from this site; this is a small example with a flat-topped head. The several lumps of baked clay which have been interpreted as steatopygous female figurines are unlikely to be deliberate attempts at representation of the human form. (Tichý, 1962, 279).

i) Šarovce, reg. Želiezovce, S.C. Slovakia. Settlement of the middle phase of the Linear Pottery culture in this region (Želiezovce I). 1 flat figurine decorated with incised parallel lines (Novotný, 1958, 14).

j) Nosocice, nr. Zielona Gora, W.C. Poland. 1 badly damaged figurine with "notenkopf" decoration (Jazdzewski, 1965, 63).

Among the sites of west-central province of the Linear Pottery cultures, that is Bohemia, Bavaria, and Central Germany including Saxony, only 6 sites have produced figurines:

a) Bylany, nr. Kutná Hora, E. Bohemia. All phases of the Linear Pottery cultures are represented at this site. 3 figurines including one flat upper part, 1 flat lower part decorated with "notenkopf" designs, (unpublished at Bylany), and a possible flat upper part with flat-topped head. (Soudský, 1960, 9; 1962, 191).

b) Nerkewitz, co. Jena, E. Germany. Settlement site of the middle phase

of the Linear Pottery culture. 1 figurine consisting of, standing, thick body with protruding buttocks and flat-topped head; there is evidence that the arms were curved round away from the body; it is decorated with incised patterns, including meanders. (Grossmann, 1935, 74; Butschkow, 1935, 160; Quitta, 1960, 171).

c) Quedlinburg co. Halle, E. Germany. Cylindrical head of figurine with flattened top; decorated with incised curvilinear designs. (Quitta, 1960, 170).

d) Clanschwitz, co. Leipzig, E. Germany. 1 flat upper part of a figurine with incised decoration (Hoffmann, 1963, 125).

e) Mauna, nr. Meissen, co. Dresden, E. Germany. 1 upper part of a sitting figurine decorated with incised "winkelband" decoration. (Hoffman, 1963, 125; Coblenz, 1956, 273). The settlement has material from all phases of the culture.

f) Wehlitz, co. Leipzig. Settlement from the later Linear Pottery culture in S.E. Germany. 1 cylindrical upper part of a figurine decorated with incised lines on the back. (Hoffman, 1963, 124; Butschkow, 1935, Pl XXXV:5).

There are at least 3 examples of anthropomorphic pots from this region: including an example from Močovice nr. Časlav which has analogies with the large anthropomorphic pots from the middle phase of the Linear Pottery culture in the middle Tisza valley, e.g. Szegvár (Túzkőves) (Quitta, 1960, 175; Škrdlé, 1927, 549).

From the western province, that is West Germany and the Low Countries, there is only 1 site which has provided a figurine:

Sittard in S. Holland. There is a possible figurine associated with



pottery from the earlier part of the settlement; this consists of a cylindrical fragment, decorated with incised lines (Modderman, 1959, 99-101).

A triangular head in relief on a pot from Butzbach (Griedel) should be mentioned (Quitta, 1960, 172, fig. 11b.); also the top of an anthropomorphic pot from Stuttgart (Cannstatt) which is again strongly reminiscent of those from the Tisza valley e.g. Szegvár (Túzkóves) (Quitta, 1960, 173; Kimmig and Hell, 1958, fig. 24).

Compared to those of the Karanovo I-Starčevo-Körös and Vinča-Tordoş-Boian I-Veselinovo cultures, the clay figurines of the Linear Pottery cultures are a rare feature. However, the distribution and quantity of the figurines in the earlier neolithic settlements of south-east Europe seem scanty when compared to those of the later neolithic and eneolithic cultures of the same area, where figurines occur on almost every site and in large numbers (Vinča-Pločnik C and D; Gumelniţa-Salcuţa; Cucuteni-Tripolye; etc.). The significance of this increase is discussed in more detail in another paper, but it is likely to be connected to various factors, including an improvement in agricultural techniques resulting in greater productivity, stability of settlement and increase of population, and the beginning of copper metallurgy; it is also possibly connected with a change in attitude to and use of the figurines, although at this stage that is very difficult to prove.

However, although the occurrence of clay figurines in the earlier neolithic settlements of south-east Europe is by no means universal, and their numbers are relatively small, it is clear that they represent a definite tradition of making figurines in these cultures, and that they are not imports from elsewhere or the result of a sporadic whim.

This tradition is preserved to a certain extent in Linear Pottery settlements of the Middle and lower Tisza valley, where the influence from the preceding Körös culture and the contemporary Vinca culture was particularly strong. In the same way the tradition of the small nuclear family houses of south-east Europe was retained in the Linear Pottery cultures of this region (middle and later phases).

With increasing distance from the influence of these south-eastern cultures with their sophisticated traditions, the clay figurines become even more sporadic, until they could be classed as exceptional rarities. However, they are no more primitive than those of the lower and middle Tisza valleys which are clearly inspired by the figurines further south (Vinča-Tordoš); the figurines of the central and western provinces of the Linear Pottery cultures are also very similar in form to those of the Tisza valley, consisting of a flat standing body, with a flat topped head; the face tends to be less distinctly triangular but the facial features are represented in the same way. Thus they also could represent occasional poor attempts to reproduce Vinča-Tordoš type figurines.

An alternative suggestion has been made that they represent sporadic manufacture in clay of objects which were normally made in some organic material which has not been preserved, such as wood. The support for this has been the flat shape of the Linear Pottery figurines, and the sudden appearance of clay figurines in the early phases of the Tripolye-Cucuteni cultures of the Ukraine and Moldavian SSRs and N.E. Rumania of an unusual shape which might suggest wooden prototypes. However, there is no positive evidence for wooden figurines in this region or on the sites of the preceding Linear Pottery cultures, so that the idea should perhaps be treated with great scepticism. The question of the

Tripolye/Cucuteni figurines will be discussed in a later chapter dealing with the Linear Pottery influence on the succeeding Tripolye/Cucuteni cultures.

It is equally possible that the pattern of shifting settlements and a lower standard of living and lower food-productivity were responsible for the disappearance of this sophisticated cultural trait along with painted pottery, and other features to be mentioned in this chapter.

2) The distribution of clay stamp-seals, spatulae and other supplementary features of the material culture in the early neolithic period in central and south-east Europe.

The features which are regarded as typical not only of the Starčevo-Körös-Criș-Karanovo I cultures, but also of the contemporary cultures of Greece and Anatolia include clay stamp-seals, clay "altars", clay "spindle-whorls" and "weights", and clay and bone spatulae.

Clay stamp-seals, often referred to as "pintadera", consist of a round or oval disc with a flat, concave, or convex stamping surface and a short roughly conical or cylindrical handle; the stamping surface is provided with excised patterns including meanders and spirals. Their function has always been interpreted as connected with making a mark by stamping on a surface, but it is a matter of great dispute as to what the surface was; human skin, skeletons, pottery, figurines, leather, and even bread (as a mark of ownership) have all been suggested; Kutzian points out that the negative pattern of the excised surface would suggest stamping on wood (Kutzian, 1947,8; Garašanin D., 1954, ). It is possible that the decorated surface was not for stamping at all, but that the "pintadera" had some other function, perhaps as clay copies of the stone "studs" as seen in the aceramic neolithic levels at Gremnos (Milojčić, 1956b, 142-183)



Sufli magula (Theocharis, 1958, 20-86) and Hacilar VI (Mellaart, 1965, 116).

The distribution of the clay pintadera is especially in the Cris sites of Rumania; they are less frequent in the Körös sites of S.E. Hungary, and even less in the Starčevo sites of Yugoslavia (Garašanin D., 1954, ; Kutzian, 1947,8). No pintadera have ever been found in the material of the Linear Pottery culture, not even in those sites of the middle and lower Tisza valley where, as mentioned in previous chapters, there was strong influence from the preceding Körös culture. In this region, however, there was also strong influence from the contemporary Vinča-Tordoš culture of Yugoslavia, and it is interesting to note, in this context, that only one clay stamp-seal was discovered at the site of Vinča (7.3 m. depth) and only very rare examples from the other sites of the Vinča and related cultures (Garašanin M., 1951a, 49).

Small triangular vessels with straight sides and a foot at each corner, which have been interpreted as "lamps" or "altars" are very typical, although not particularly numerous, in the material of the Karanovo I-Körös)Cris)Starčevo cultures; they were often decorated by simple excised patterns and painted after firing. (Georgiev, 1961, 63-65; Kutzian, 1947, 7; Garašanin D., 1954, ). In the Vinča-Tordoš culture they remain basically the same shape, but with elaborations such as anthropomorphic terminals at each corner, and they are decorated by incised rather than painted designs. (Garašanin M., 1951a, 30-31).

There are sporadic examples of these from the Linear Pottery cultures not of the Tisza valley but from Moravia, and Bohemia:

a) Ujezd (Žadlovice) N.C. Moravia. The example represents what has been interpreted as a four-cornered "altar" although only one corner has been preserved. The site includes pottery of the earlier phase of the culture. (Tichý,



1960, fig. 14:4).

b) Bylany, E.C. Bohemia. The object which has been interpreted as a model of an oven could possibly represent an evolved form of the triangular vessel (Soudský, 1960, Pl.27).

Clay objects which have been interpreted as "spindle whorls" are a very common feature in the early neolithic settlements of south-east Europe. These also occur in the Linear Pottery sites along the Tisza, including the type with four short "arms", as seen at Bicske, W. Hungary (material unpublished in Székesfehérvár Museum). The simple round or ovoid or biconical spindle-whorls predominate in the Tisza sites such as Kőkenydomb (Banner, 1929, Pl.VII) and Csoka (Banner, 1960,43, Pl. XXXIV-XXXV). North of the middle valley of the Tisza, however, they are much rarer, and hardly occur in the sites of the Linear Pottery of Bohemia and Germany. (Tichý, 1962, 278).

The function of the cylindrical or tomato-shaped perforated objects which occur very commonly in the settlements of the Körös culture, as well as the Starčevo, Criş and Karanovo I cultures, has been much discussed. They have always been interpreted as weights of some kind, but it is disputed whether they were weights for fish-nets, since they occur so commonly on the lake-and river-side settlements of the Körös culture, or whether they were weights for a waaving-loom. (Kutzián, 1947, 8; Garašanin D., 1954, ).

The "weights" occur in large quantities on the sites of the Linear Pottery culture settlements of the lower Tisza valley, such as at Kőkenydomb and Csoka, although those with a tomato-shape are much less common, and weights with a cylindrical or pear/conical-shape are dominant (Banner, 1960, 43). It is possible of course, that not all the weights should be interpreted in the same way and that the function of the "tomato-shaped" weights is different from that of the

others. Although the bone industry of the Karanovo I-Starčevo-Criş-Karos cultures

In the more central region of the Linear Pottery cultures, clay weights are much rarer than in the transitional region towards south-east Europe, and those that are similar to the lower Tisza examples are predominantly pear-shaped (Tichý, 1962, 277). However, it seems probable that a large number of worn pebbles which had been previously disregarded or interpreted as figurines (Neustupný J., 1956, 3-14) should be interpreted as unperforated stone weights for fish-nets. These occur on a number of Linear Pottery sites, especially those by rivers, as in N.E. Moravia (Šikulova, 1961, 8-15).

Clay spoons or spatulae are comparatively uncommon in the Karanovo I culture but are typical of the material of the Starčevo, Criş and to a certain extent the Körös sites. They are not very common in the Linear Pottery sites of the middle and lower Tisza valleys, although there are sporadic examples as at Gorzsa (Cukor tanya) (Gazdapusztai, 1963, Pl. VI:5). This is a rough example with a deep bowl and short handle.

There are finer examples, which occur quite frequently in the Linear Pottery sites of the upper Tisza such as at Hermann-Otto cave nr. Miskolc and Rakmaz and Borsod (Derekegyhaza) in N.E. Hungary, from the middle phase of the culture (Tompa, 1929, 37, Pl. XXIII:8, 9, Pl. XXV:1,3,5, Pl. XXXI:13, Pl. XXXV:9). In Moravia clay spoons or ladles also occur at the sites of Bojanovice, S.W. Moravia, Brezolupy, Mohelnice, N.C. Moravia, and Vacenovice, S.W. Moravia. These examples tend to have much longer cylindrical handles and deeper bowls than those of south-east Europe. It is interesting that most of these Linear Pottery spoons from Moravia are from the earlier phase of the culture, and that they do not occur further west. (Tichý, 1962, 278, Pl. 22).

Although the bone industry of the Karanovo I-Starčevo-Criș-Körös cultures is not particularly rich in the variety of its forms, there is one implement which is very characteristic of these cultures; this is the so-called bone spatula. The function of this implement has also been much discussed and disputed; by some it was thought to be for scraping the milled grain off a quern thus resulting in the asymmetrical form of the bowl of the spatula; others have thought that it is the instrument used in smoothing and burnishing or even for decorating the surface of the fine ware of the early neolithic cultures of south-east Europe. The spatulae of the Starčevo culture tend to have an ovoid bowl, whereas those of the Körös culture have a predominantly rhomboid bowl, which may suggest a difference in function. The handles of the Körös culture spatulae are long and cylindrical whereas those of the Starčevo culture are often flat (Kutzian, 1947, 9; Grašanin, D., 1954 ). The bowls of the spatulae are generally only slightly curved, although those of the Karanovo I/II settlements are often more spoon-shaped (Georgiev, 1961, Pl. IV:7,8) with a long cylindrical handle. Spatulae also occur in the settlements of the Vinča-Tordoș culture, especially those of a flat waisted shape (Garašanin M., 1951a, 49). These spatulae have also been interpreted as bone figurines (Dumitrescu, 1938, 374-5).

A similar interpretation has been given the few bone spatulae of the Linear Pottery culture. (Neustupny, J., 1956 ). These include the examples from Praha (Veleslavin) and Praha (Šarka) in C. Bohemia (Quitta, 1960, 170-171); (Čaplovic, 1956, fig. 121) there are more spoon-like examples from Statenice in C. Bohemia (Stocký, 1926, 60) and Hurbanovo, S.W. Slovakia,). However, apart from the lower Tisza valley, bone spatulae are a more sporadic feature in the material of the Linear Pottery cultures than clay figurines.



### Summary

There are a certain number of features in the material culture of the early neolithic cultures of south-east Europe which may be regarded as sophisticated or superfluous, that is their development was associated with a more stable, prosperous economy; they need not be regarded as basic essentials in the physical existence of a community (although they may appear to be quite essential spiritually to the community in question). Among these may be classed the clay female figurines, clay stamp-seals, and the three-cornered straight-sided vessels which have been variously interpreted as "altars" and "lamps". These form a characteristic part of the Karanovo I, Starčevo, Körös and Criş cultures, as well as the contemporary cultures of Greece and Anatolia. Their occurrence in the settlements of the Linear Pottery cultures of Temperate Europe is remarkably rare; no stamp-seals have occurred, only 2 possible fragments of "lamps", and sporadic figurines.

The figurines, when they do occur, are much more related to those of the early part of the Vinča-Tordoş culture, than to the Starčevo/Körös examples, and the majority are likely to be associated with material from the middle phase of the Linear Pottery cultures, rather than the early phase. It is more likely that the cause of the decrease in the manufacture of clay figurines is the relative impoverishment and lowering in the standard of living, rather than the fact that they were made in a different medium such as organic materials like wood.

The other group of objects which disappear in the material of the Linear Pottery cultures, but which are typical in the neolithic cultures of south-east Europe, are those which are connected with specific functions which no longer apply in the economy of the Linear Pottery culture (although this may also be the case with



clay stamp-seals and "lamps"). Among these are objects possibly connected with fishing, such as clay weights; these also occur in the Linear Pottery cultures of the middle and lower Tisza valleys where the animal bone material and the position of the settlements shows that their economy followed that of the Körös settlements, in the importance that was attached to fishing. Other objects which hardly appear, in the Linear Pottery settlements, except those of the lower Tisza valley, representing a mixture of the Vinča and Linear Pottery cultures, are "spindle-whorls" and bone spatulae, which, among other things, have been interpreted as burnishing implements. It is true that if they do represent implements for burnishing pottery, the bone spatulae would have been redundant in the material culture of the Linear Pottery settlements. It is not possible to prove, on this kind of basis, however, that, because spindle-whorls are a rarity in the Linear Pottery cultures, except the lower Tisza valley, spinning did not exist, although an examination of the animal bone material shows that sheep/goats were relatively unimportant in the Linear Pottery settlements, compared to the Körös settlements where they were the dominant domestic animals.

Linear Pottery cultures. Only when this has been done will there be any attempt to discuss the many different methods of classifying the Linear Pottery.

# 1) The fabric of the pottery of the early neolithic cultures in south-east and central Europe.

As mentioned in the second chapter of the first part, the pottery of the early neolithic cultures of south-east Europe consists of three basic types:

a) fine, hard yellow/red pottery with a thick red or white polished slip which is often painted before baking.

b) fine grey/buff/red ware mostly undecorated, with a smooth, often

## CHAPTER IV

### An Analysis of the Forms and Decoration of the Pottery of the Linear Pottery Cultures.

The incised pottery is the aspect of the Linear Pottery culture which is the most striking and distinctly uniform feature in all the regions of the culture and for this reason it is the feature which has been most discussed, analysed and classified. Although the incised decoration at once distinguishes the pottery of south-east Europe, the form, texture and decoration of the earliest Linear Pottery is very reminiscent of the Körös culture, and indicates that the typical Linear Pottery incised decoration is one more feature which represents the adaptation of early agriculturalists from south-east Europe to the different physical conditions of temperate Central Europe.

Therefore in this chapter each aspect of the pottery, (texture, form and decoration), will be discussed in relation to the pottery of the early neolithic cultures of south-east Europe, especially the Körös culture, and with reference to the basic differences between the pottery of the earlier and later phases of the Linear Pottery cultures. Only when this has been done will there be any attempt to discuss the many different methods of classifying the Linear Pottery.

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As mentioned in the second chapter of the first part, the pottery of the early neolithic cultures of south-east Europe consists of three basic types:

- a) fine, hard yellow/red pottery with a thick red or white polished slip which is often painted before baking.
- b) fine grey/buff/red ware mostly undecorated, with a smooth, often

burnished or polished surface.

c) thick, coarse chaff-tempered pottery, buff/orange colour, decorated by finger-and nail-impressions etc.

In the chapter in which these groups were last mentioned, it was the first group which was discussed in detail, since this is distinctive and typical of the early neolithic cultures of south-east Europe, and intrusive in the material culture of the early Linear Pottery culture.

In this chapter, however, the fabric and forms especially of the last group will be discussed, since these form an essential continuum between the traditions of the Starčevo and Körös cultures and those of the Linear Pottery cultures, and are the foundation on which the characteristic forms and decoration of the pottery of the Linear Pottery culture developed.

The fine plain ware and coarse rusticated ware are universal in the material from the sites of the Karanovo I, Starčevo, Körös and Criş culture. The quality and relative proportion of the fine ware, however, varies with each region. For example, in the Starčevo settlements of Yugoslavia and Criş settlements of Rumania, there is a much greater proportion of fine burnished ware, and the quality of manufacture is much higher than in the settlements of the Körös culture of south-east Hungary (Comşa, 1959c, 183; Garašanin D., 1954, 73-75). In the more marginal regions of the early neolithic cultures of south-east Europe, such as N. Yugoslavia, S.E. Hungary and Transilvania, the fine ware tends to thicken, showing variable firing between inner and outer surfaces, and tempering material such as chaff, and thus grades into the better coarse ware. (Kutzian, 1947, 4-7; Fewkes 1937).

The true coarse ware is always distinguished by its chaff tempering, thick



walls and bad firing. The walls may be up to 4 cm. thick, and never less than 0.5 cm.; the average thickness is 1.5 cm. (Garašanin D., 1954, 63). The colour of the pottery, depending on the firing, is generally buff/orange, with a dark centre to the section. Often the wall oxidised layer is only 1-2 mm. thick. The surface is unslipped, and usually unpolished except for the inner surface of the pot. (Garašanin D., 1954, 62-64, figs. 1-3). On the sites of the Körös and transitional Starčevo-Körös cultures, this type of pottery makes up 90% of the total. (Trogmayer, 1964, 68-70; Brukner, 1960, 92,96).

North of the Körös river, the pottery of the earliest phase of the Linear Pottery culture on the Alföld, N.E. Hungary, W. Hungary, Moravia, S.W. Slovakia, Bohemia and S.E. Germany is distinguished by being made of a fabric identical with that of the coarse ware of the Körös culture. At most of the sites it is possible to see a difference in this already coarse pottery between the very coarse kitchen ware which could be as thick as 8 cm. and the slightly finer ware which was generally 1.5 cm. thick and decorated with incised patterns.

At Tiszavasvári (Keresztfal) nr. Nyíregyháza, on the Alföld, the dominant group of chaff-tempered, soft orange/buff incised ware contrasted strongly with the thin fine hard ware with a red burnished slip and painted decoration, which is likely either to have been imported from the region of the Starčevo culture or to represent a retention of the southern tradition of making painted pottery in this region of the Great Hungarian Plain. (Material unpublished in the Institute of Archaeology, Budapest with N. Kalicz).

Among some of the finer chaff-tempered sherds of the settlements of N.E. Hungary, such as Aggtelek (Tompa, 1929,50), Bodrogkeresztur (Tompa, 1929, 52-53; Korek, 1927, 23) Budőspester (Material unpublished in Miskolc Museum), and East

Hungary such as Tiszavasvári (Keresztfal) and (Pátelekhát), there are those which have been "self-slipped" and then decorated with incised patterns which are elaborated by black-painted patterns. The relationship between these sherds and the fine red-slipped black painted ware of the same region has been discussed in Part I, Chapter 2. It is possible that more sherds were decorated in this combined incised and painted style but the soft "self-slip" has not been preserved. But even the few sherds which have been preserved are important in providing a link between the fine painted ware of Starčevo/Körös type with the black on buff painted ware of the middle phase of the Linear Pottery culture which will be discussed below.

The soft, orange chaff-tempered ware occurs as the exclusive pottery of the settlements of the early phase of the Linear Pottery culture; the paste appears superficially to be quite uniform in all the sites, such as Zalavár (Material unpublished in the National Museum, Budapest) and Bicske (Material in Szekesferhavar Museum) in west Hungary, Žopy (Material in Institute of Archaeology, Brno), Boskovštejn and Bojanovice etc (Material in Moravian Museum, Brno) in south Moravia (Tichý, 1960, 415-442). Mohelnice in N. Moravia (Tichý, 1962, 270-271) Bylany and Nový Bydžov in E. Bohemia (Material at Institute of Archaeology research centre, Bylany) Eitzum etc, in E. Germany (Quitta, 1960, 11-38); it is possible that local differences would be visible with the aid of thin-sectioning, in the amount of chaff and other artificial impurities used and the composition of the clay.

From a thin-section taken from a sherd from Nový Bydžov in E. Bohemia, it is possible to see a number of large holes representing burnt-out organic material such as chaff, only very minute pieces of mica (muscovite) which are likely to be

natural in the clay since mica schist and gneiss occurs as outcrops in the loess in many areas of E. Bohemia; there are also possible minute pieces of broken sherds; however, a very fine paste as well as the predominant chaff-tempering is what distinguishes the fabric of the early phase of the Linear Pottery culture from the later phases.

The pottery from the earliest phase at Bylany is identical in texture and colour to that from Nový Bydžov, except that there are possibly more examples where the original surface of the pot has been preserved. The colour varies from completely reduced grey sherds to fully oxidised red/orange sherds, the majority of examples being intermediate with the surface of the pot being oxidised and the interior remaining black/grey.

Among the early Linear Pottery sherds of this type there are sherds of a quite different group which becomes especially characteristic of the beginning of the middle phase of the Linear Pottery culture. It is this fabric which begins the series of classic Linear Pottery fabrics. The material in question is also of a very fine clay, but the mineral inclusions such as mica (muscovite and biotite) are larger and more common, and the chaff is no longer a deliberate filler and is much less important or absent altogether; the colour of the clay is a light buff or grey grading to off-white. The paste also often includes large lumps of quartz or quartzite. The section of the sherds shows much less variation in colour, and therefore firing conditions, between the interior and surfaces. This paste occurs in the settlements of W. Hungary, Slovakia and Moravia, but is especially characteristic of Bohemia, Germany and, to a certain extent, Holland. In east and south-east Hungary however, the development of the Linear Pottery fabrics is slightly different and will be discussed below.

The clay used for the pottery of the middle phase of the Linear Pottery culture, with "notenkopf" decoration is basically the same as that of the early pottery except that chaff-tempering is absent, and there appears to be a deliberate use of fine muscovite and biotite (mica) as a filler; the clay was fired in reducing conditions which resulted in a uniformly grey or grey/black colour of the pots, the surface of the pot tending to be blacker than the interior; the admixture of fine mineral and the firing conditions resulted in a ware which was much harder and less powdery than the ware of the earlier phases of the Linear Pottery culture.

This type of pottery occurs throughout all the provinces of the Linear Pottery culture from Holland to the Ukraine; there was a variation in Moravia, especially north and central Moravia, where graphite was used as the basic filler for the pottery; the deposits of graphite occur especially in the upper Morava valley from Moravska Trebova to the Polish border. (Tichý, 1961, 76-84; 1962, 276-277).

Towards the later phase of the Linear Pottery culture, there is a gradual coarsening of the ware and a roughening of the surface as not only fine mica but also larger pieces of grit were used as a filler, although mineralogically the clay of the pottery of this phase is the same as that of the previous phases. The fabric of the later Linear Pottery is also hard and was fired in reducing conditions since the colour is the same grey or grey/black, and often quite black; there is more variation between the colour of the interior and surfaces of the sherds.

The coarse ware associated with the middle and later phases of the Linear Pottery cultures is manufactured from the same clay as the finer wares, but inclusions consist of huge lumps of mica (biotite), and large quartzite etc. pebbles.



The ware shows firing under more oxidising conditions, since the coarse pottery tends to be buff or orange in colour. The texture of the surface is hard and rough, with almost constant interruptions of the surface by grit, pebbles, etc.

Although the fabric of the earliest Linear Pottery of S.E. Slovakia, N.E. Hungary, E. Hungary, and the middle Tisza valley is the same as that of the settlements further north, the later development is slightly different:

On the Hungarian Plain in E. Hungary and in N.E. Hungary there is an early development from the soft orange purely chaff-tempered ware to a finer harder ware with fine mineralogical inclusions as well as organic admixture, with more pottery being fired under careful reducing conditions resulting in a black or grey/black colour grading to buff. The average thickness of the sherds is 0.5 - 0.8 cm. and the surface is smoothed over or given a self-slip and often burnished. In the middle phase of the Linear Pottery cultures of these regions the mineralogical inclusions increase and the organic tempering becomes merely incidental and in the later phases disappears completely. The pottery remains very fine and hard with a semi-burnished or burnished surface varying from black to buff in colour. The buff ware in E. Hungary in this middle phase is painted with black paint before firing.

In the later phase of the Linear Pottery cultures of N.E. Hungary the very fine thin buff- or black-burnished wares of the Bükk culture were developed and in E. Hungary the egg-shell thin wares of the Herpály and related groups were perfected. The black-burnished pottery of N.E. Hungary is distinguished from that of the Vinča culture in having a black-burnished slip instead of being black all through. The actual clay contains relatively large pieces of mica but no organic material.

Along the valley of the Tisza, there was a similar development of fine comparatively thin chaff-tempered pottery as well as hard mica etc. tempered pottery with a grey/buff surface. In the middle Tisza valley, however, the surface was never as smooth, nor was it burnished, as in the Linear Pottery of E. and N.E. Hungary. It is always possible to feel the mineralogical inclusions on the surface of the pottery of the middle Tisza valley sites (Tisza I and II).

In the Lower Tisza valley, probably under the influence of the Vinča culture, a fine black mica-tempered ware was made in the settlements of the middle phase of this culture, with a slipped surface which was partly burnished and partly left matt as a base for painting after baking which is the decorative style so typical of the Szakalhat-Lebő group. As in the Vinča culture, there was a second group of pottery fabric consisting of coarser thicker ware with gravelly and organic admixtures, which varied from buff to grey/black in colour; the surface of this ware, however, was often given a self-slip and decorated with incised "winkelband" designs.

In the later phase of the Linear Pottery culture of this region, the fabric was the same as that of the middle Tisza valley (Tisza II), with a rough unburnished surface, black to buff surface colour and comparatively thin walls (0.3 - 0.5 cm.).

## 2) The forms of the pottery of the early neolithic cultures of south-east and central Europe.

The basic forms of the plain fine ware and the coarse ware of the Starčevo, Karanovo I, Körös, Criş and for that matter contemporary neolithic cultures in Greece, were the pedestalled bowl and the large globular pot. The

unusual forms of the S. Bulgarian Karanovo I culture, including the tall tulip-shaped pot on a pedestal, do not occur in Yugoslavia, Rumania or S.E. Hungary; much more typical of these regions is the hemispherical or straight-sided bowl on a hollow pedestal 3 - 5 cm. high. These pedestalled bowls are most characteristic of the fine plain ware; the forms of this group also include bowls on a short solid disc-base, 2 - 3 cm. high, bowls with a simple flat base, and, especially characteristic of the Körös and transitional Starčevo-Körös cultures, bowls on four little feet. (Kutzian, 1947, 4-7; Garašanin D., 1954, 77-79).

The forms of the coarse pottery and examples intermediate between the two groups include especially the globular or bomb-shaped pots, up to 50 cm. high, with short concave or cylindrical necks and a low base; there is also the important group of bottle shaped pots 20-30 cm. high with high cylindrical or concave necks, and short disc or flat bases, which are distinguished by four or six ribbon-lugs on the body; sometimes, these pots are assymetrical ("rucksack pots") for greater ease in carrying them. (Garašanin D., 1954, 70-73; Kutzian, 1947, 4-7).

It has often been suggested that the forms of the pots of the Linear Pottery culture are derived from gourds, because the basic shape in the classic Linear Pottery culture of central Europe is a simple hemispherical or globular bowl with a round bottom which appeared to have no prototype in the early neolithic cultures of south-east Europe, and which is certainly very reminiscent of a gourd, and which, as Childe points out, occurs in the exact region where gourds cease to harden, at least under modern conditions. (Childe, 1929, 65-66).

Since the early phases of the Linear Pottery culture have recently been distinguished, it is possible to see that these simple round-bottomed bowls are a

development of the middle phase of the culture, and that the forms of the early phases of the culture are related much more to the forms of the pottery of the early neolithic cultures of south-east Europe. These forms include especially the pedestalled hemispherical bowls, the cylindrical - or flaring-necked bottles with ribbon lugs on the body, flat-bottomed globular or hemispherical bowls, straight-sided bowls and wide bowls with feet; these forms are common to all provinces of the early phase of the Linear Pottery culture, that is the Alföld, N.E. Hungary/S.E. Slovakia, W. Hungary, E. Austria, Moravia, S.W. Slovakia, Bohemia and S.E. Germany (Saxony). In each region there are, of course, slight variations in these forms and additional forms. The prototypes for all these forms may be found in those of the fine plain ware and coarse ware of the Körös and Starčevo-Körös culture.

As mentioned in Part I, Chapter 2, the basic form of the Alföldi fine red-slipped painted ware was the pedestalled bowl, which tended to be slightly higher and more flaring than those of the Körös culture; for example the complete one from Debrecen (Tócsópart) is 4.5 cm. high and is flared at an angle of approximately 30° (Material in Debrecen Museum). This is the most important pot form of the pottery of the early phase of the Linear Pottery culture in this region, except of the very coarsest pottery. It is manufactured as commonly in the softer orange/buff chaff-tempered ware and decorated with incised lines.

A very distinctive form of this region is the straight-sided bowl with a flat bottom and a square mouth such as the example from Tiszavasvari (Keresztfal), which is made of a comparatively fine material and decorated with incised designs. There is another bowl from this site in a similar finer chaff-tempered ware which has an oval mouth (Material unpublished in the Institute of Archaeology, Budapest,



with Nandor Kalicz). It is possible from the style of decoration and the fabric of the pottery that these examples are not from the very earliest phases of the Linear Pottery culture in the Alföld, but are from the phase after the initial development of the incised decoration and expansion of the agriculturalists to this region.

The same may be said of the bowls which occur on this and other sites of the early Linear Pottery culture, which have a rather biconical profile with a lug at the angle. This shape of pot is much more reminiscent of the biconical bowls of the early Vinča-Tordoš culture. (Milojčić, 1949, 79-80).

In the early Linear Pottery culture of N.E. Hungary/S.E. Slovakia the forms included pedestalled bowls and simple flat-bottomed bowls; already, however, the series of exotic perforated lug/spouts which become so characteristic of the later Linear Pottery culture in this region (Bükk culture), can be seen in early forms, such as the example from Kapušany in S.E. Slovakia (Blahuta, 1959, 5-32, 145). The early pedestalled bowls of this region tend to be higher than those of the Alföldi or Moravia; the examples from Tiszadada, N.E. Hungary and Barca III, 95: S.E. Slovakia (Lichardus, 1964, 845) are more reminiscent of those of the later neolithic and eneolithic cultures of W. Hungary (Lengyel) and E. Hungary (Herpály), 99:1 but there fabric and decoration are the same as those of the pottery of the early Linear Pottery culture. Forms which occur only in these regions during the early phase include a wide flat-bottomed bowl with a wavy rim, such as the example from Aggtelek, N.E. Hungary which is probably not from the very earliest phase (Domonkos and Leonhard, 1925, fig.1; Nyáry, 1881). The globular pot with a long cylindrical neck such as the example from Bodrogkeresztur is probably a local variation of the bottles with narrow cylindrical necks and lugs on the body which

are typical of the Körös culture and of the early Linear Pottery culture of Central Europe (Tompa, 1929, 27).

The forms of the pottery of the early phase of the central province of the Linear Pottery cultures, including W. Hungary, E. Austria, S.W. Slovakia and Moravia, include the same forms as those of E. Hungary and N.E. Hungary/S.E. Slovakia: pedestalled bowls, with the hollow pedestal an average of 5.5 cm. high, such as the example from Žopy, S. Moravia (Tichý, 1960, 425); straight-sided bowls in the shape of a truncated cone, hemispherical and globular pots with flat bottoms, bottle-shaped pots with narrow cylindrical or flaring necks and ribbon lugs arranged on the body and bottles with wider cylindrical necks and button lugs (Tichý, 1960, 435; 1962, 274-276).

Small bowls and pots with four small feet like those of the Koros culture also occur, such as the example from Bohušice, S.W. Moravia, but not frequently. Biconical bowls with lugs on the angle, like those of the early Vinca-Tordos culture occur very commonly in this region, such as the examples from Boskovštejn and Žopy in S. Moravia (Tichý, 1960, 429; Quitta, 1960, 167).

The biconical pots of the early Linear Pottery cultures of Central Europe do not have the sharp-angled profile of the Vinča examples; they tend to have a more rounded profile, although in most cases retaining the lug at the angle, and are more globular/biconical, than true biconical pots. Another difference is that the biconical pots of the Vinča-Tordoš and related cultures retain the sharp angle on the inner surface of the pot, whereas in the Linear Pottery bowls the angle is completely rounded off on the inner surface.

In Bohemia and E. Germany (Saxony), the same forms occur as in Moravia, but the pedestalled bowl is much rarer and the dominant form is the straight-

113 -necked jar, the hemispherical and  $3/4$  spherical bowl. The latter shape appears to have been developed from the sharp-angled bi-conical pots, a similar process to that in Moravia, etc. Biconical bowls with a sharp-angled profile and lugs on the angle also occasionally occur in this region, such as the examples from Bernburg and Erfurt in S.E. Germany (Quitta, 1960, 167, fig. 5: 1, fig. 7).

Small bowls with four feet also occur occasionally, as at Mauna in S.E. Germany (Hoffmann, 1963, 47) and Bylany in E. Bohemia (Soudský, 1962, Pl. XXX:3).

In W. Germany and Holland, although the early forms such as pedestalled bowls, footed bowls, sharply-angled biconical bowls and straight-necked jar sometimes occur, the basic pot-form is the hemispherical and  $3/4$  spherical bowl, in which the bottoms tended to become more and more rounded. (Quitta, 1960, 30-38; Waterbolk, 1959, 143-155; Modderman, 1959, 88-94). These tendencies reflect the general development in the pot-forms of the Linear Pottery cultures of Central Europe towards the middle and later phases. The pottery of W. Germany and Holland represents the culture after its initial stage of development and expansion, and the predominance of the hemispherical and  $3/4$  spherical, and then completely bomb-shape vessels with rounded bottoms is characteristic of the middle and later phases of the Linear Pottery culture, not only in this region, but in all the provinces of the culture, again from Holland to the Ukraine.

In Holland and West Germany the development in the late phase of the Linear Pottery culture towards piriform vessels can be seen very clearly; this shape of vessel, and its elaborate variations, is not only characteristic of

the last phases of the Linear Pottery culture in the western and west-central provinces (Holland to Bohemia), but also of the post-Linear Pottery cultures in this region such as Rossen and "Stichbandkeramik" cultures. (Modderman, 1959, 96-97; Bohmers et al., 1959, 225-226).

Just as it is possible to see a gradual development from the simple hemispherical and globular bowls of the middle phases of the Linear Pottery culture to the piriform or bag-shaped bowls of the late phases, so it seems possible that the hemispherical,  $3/4$  spherical and bomb-shaped pots themselves are not so much skeuomorphs of gourds, as a development from the sharply-angled biconical bowls which are seen in the early phases of the Linear Pottery culture, and which occur very commonly in the early Vinča-Tordoš and related cultures of south-east Europe.

The hemispherical and globular bowls of the middle and later phases of the culture have very little variation in all the different regions. In Central and West Europe there is a predominance of round bottomed pots; whereas in south-east Poland, the Ukraine and Moldavian SSRs and N.E. Rumania (Moldavia) there is an equal occurrence of flat and round bottoms (Kulczycka, 1964, ; Passek and Chernush, 1963, 32-35; Comsa, 1959a, 48). In these regions also, especially the Ukraine and Moldavian SSRs and N.E. Rumania there is a type of pot consisting of a globular body with a short wide neck, which is very characteristic., such as the example from Glăvănești Vechi, N.E. Rumania (Comsa, 1959a, Fig. II: 14) and Nezvisko (Passek and Chernush, 1963, Fig. 25:21). The relationship which these forms possibly have with the forms of the pottery of the Southern Bug cultures will be discussed in a later chapter, concerning the Linear Pottery cultures in the Ukraine.



The coarse ware associated with the Linear Pottery of Central Europe is most commonly in the form of large bomb-shaped vessels with lugs all over the body; also large storage jars, up to 1 m. high with a globular body and flaring neck, such as the example from Bylany (Soudský, 1962, Pl. XXIX:a). Thus they are more or less coarse copies of the finer forms, and only superficially resemble the coarse ware of the Körös culture; for example, the ring base which is so characteristic of the bomb-shaped coarse pots of the Koros culture hardly ever occurs on those of the Linear Pottery cultures. But, inasmuch as the coarse ware has a common origin with that of the Koros culture, the two may be said to be similar.

The development of forms of pottery in the middle and later phases of the Linear Pottery culture in N.E. Hungary/S.E. Slovakia and E. Hungary is not the same as the development in central and west Europe. In N. E. Hungary/S.E. Slovakia there is the development of the comparatively sophisticated forms of rounded piriform grading to biconical bowls with square mouths and flat bottoms, and globular or piriform bomb-shaped pots with a concave base, straight-narrow-necked jars, flared-neck jars, often with very elaborate perforated lugs. These forms become particularly well-made in the "Classic" phase of the Bükk culture, which might be equated with the late phase of the general development of the Linear Pottery culture in this region (Tompa, 1929, 25-37; Lichardus, 1962, 49, 53).

On the Great Hungarian Plain (E. Hungary), the middle phase of the Linear Pottery cultures is characterised by a development in the pedestalled bowls, in which the hollow pedestal is made higher and larger, reaching the climax of its development in the Herpály and Csöszháalom pots, which are in

their turn prototypes for the typical pedestalled bowls of the Tiszapolgar culture. (Kutzian, 1963, 249). Typical of the pedestalled bowls of the middle phase are the black on buff painted examples from Sátoraljaujhely, in the north-east corner of the Alföldi. (Tompa, 1929,22). In addition to these there are the flat-bottomed spherical and straight-sided bowls similar to those of north-east Hungary.

In the middle Tisza valley the development of the typical forms of the so-called Tisza culture may be seen in the square-sectioned pots, bucket-shaped pots, bowls and elaborate pots on tall pedestals, as well as the simpler forms of sharp-angled bi-conical bowls, straight-sided bowls, globular and hemispherical bowls, etc. All these forms reach the climax of their development in the late phase of the Linear Pottery culture (Tisza II).

In the Lower Tisza valley, the forms of the pottery of the Szakalhat-Lebő group include mostly the simpler types such as the deep straight-sided bowls, truncated cone bowls, hemispherical bowls, wide bowls and sharply-angled biconical bowls; many of these have low solid disc bases instead of simple flat bottoms, which is a feature also seen on many of the pots of the Koros culture. (Trogmayer, 1957, 19-57; Banner and Balint, 1935, 76-96).

Among all the settlements along the Tisza river long oval flat dishes are found, up to 50 cm. long. Normally, when these are found in a settlement in which the material is not that of the so-called Tisza culture influence, elements or imports such as at the site of Békásmegyer (Vöröshadsereg) nr. Budapest on the Danube, where the majority of the pottery belongs to middle phase of the Linear Pottery culture of W. Hungary/Moravia/S.W. Slovakia (Tompa, 1937,30). It is more likely, that as with the other examples of coarse ware forms, this is a shape inspired by practical function rather than

fashion, and represents the most practical way of serving fish for communities living by rivers and eating fish as an important part of their diet.

3) The decoration of the pottery of the early neolithic cultures of south-east and central Europe.

The distinguishing feature of the fine burnished group of pottery of the early neolithic cultures of south-east Europe is that it is almost entirely undecorated, except for occasional fine channelling or fluting, which is very characteristic of the pottery of Karanovo II in S. Bulgaria, and becomes very common in the Vinča-Tordoš and related cultures which predominate in the settlements of south-east Europe after the initial stage in the development of the Linear Pottery culture in central Europe. (Garašanin D., 1954, 76-77; Georgiev, 1961, 63).

The coarse ware of the Starčevo, Körös and Criş cultures is decorated by various forms of rustication including especially finger- and nail-impressions, and incised criss-cross lines or "net-pattern" and to a certain extent reed and shell-impressed patterns; besides finger- and nail-impressions, there is the method of "barbotine" decoration which is very characteristic of the Körös culture of south-east Hungary: that is, plastic warts applied regularly all over the body of the pot, or an irregular surface caused by smearing a hand haphazardly across the pot when the clay was wet; there are also anthropomorphic and zoomorphic representations in relief on the pots. (Kutzian, 1947, 4-7; Garašanin, D., 1954, 64-73; Trogmayer, 1964, 85). There is no evidence for incised decoration of the type which occurs in the settlements of the earliest Linear Pottery; when incised decoration does occur on the Körös or Starčevo-Körös culture pottery, the lines are comparatively thin, approximately



1 - 2 cm. wide, and have a V-shape cross-profile, caused by executing the pattern with a sharp instrument, when the clay was half-dried. The designs are simple and rectilinear, but without any organised pattern to them.

This rusticating type of decoration (especially the nail- and finger-impressions) occurs also on the coarse ware of the Linear Pottery cultures from the early to the late phases. It is true that in the early phase of the culture this decoration is very close to that of the Körös culture, and includes such features as finger-impressions along the flat rim which is typical of the Koros culture; but this is more likely to be due to the two cultures having a common origin and traditions, than to the Linear Pottery culture being derived directly from the Körös culture as some have suggested. (Tichý, 1960, 435-436). Also, it should be pointed out that the decoration of coarse kitchen pottery is, logically, one of the most conservative features in the material culture of a settlement, and is, therefore, not a good criterion on which to base the relative chronology, origins or relationships of a culture. One can say, however, that in the coarse ware of the Linear Pottery cultures there is a great use of finger- and nail-impressed decoration, plastic bands with finger impressions, and, especially in the later periods, finger-impressed lugs all over the pot.

Just as it was believed that the classic pot-forms of the Linear Pottery culture, the hemispherical and  $3/4$  spherical bowls, and bomb-shaped pots represented skeuomorphs of gourd vessels, so it was also proposed that the classic decoration of the Linear Pottery cultures, the incised lines interrupted by dots, represented a skeuomorph of the bindings of the gourd vessels. (Childe, 1929, 65-66). The decoration of the pottery of the recently distinguished early phase of the Linear Pottery culture in East Hungary, consisting of incised single



or double lines in curvilinear, or sometimes rectilinear patterns cannot be said to be reminiscent of string or twine round a vessel any more than the forms of this early period of the Linear Pottery culture are reminiscent of the shape of gourds.

We are left then with the problem of the origin of the distinctive form of pottery decoration, incised decoration, of the Linear Pottery cultures, since it is one of the features of the culture which has no prototypes in the Karanovo I/Starčevo/Körös/Criș cultures. The decoration of the earliest phase of the culture in Hungary, Czechoslovakia and E. Germany consists uniformly of wide lines, 2.5 - 5cm. wide, with a U-shape cross-profile, arranged in simple spirals or wavy lines or meanders, with bands of single, double, or at the most, treble lines. The spiral occurs in the west Hungarian early Linear Pottery settlements such as Keszthely (Quitta, 1960, 156; Dornyay and Csalog, 1945, 1-7), as well as those of Moravia such as the example from Mohelnice (Tichý, 1960, fig. 19:5), but is almost entirely absent from the pottery of E. Hungary and N.E. Hungary. Typologically, the decorative style is obviously at a very early stage of its development, so that there is no real problem of a fully-developed style being introduced from elsewhere.

It seems likely, therefore, that the feature of incised decoration is one more example of the adaptation of the agricultural colonists to the different physical conditions of central Europe; or, rather than deliberate adaptation, it was impoverishment caused by less intensive food-production, lack of stability and a lower standard of living, which caused the disappearance of both the fine slipped ware and painted decoration (except in a corner of the Great Hungarian Plain), and a development of chaff-tempered wares and the simpler incised

decoration. Thus, in this study it is suggested that the incised decoration of the Linear Pottery cultures is a local development in the Alföldi, and thence in N.E. Hungary, W. Hungary, Czechoslovakia, E. Germany etc., although the patterns are no doubt based to a certain extent on those of the painted pottery of the Starcevo and Koros cultures.

Although the slightly differing decorative styles will be discussed in subsequent chapters in relation to the various regions of the Linear Pottery culture, since this is the principal criterion for distinguishing these regions, the general trends and developments will be discussed in this chapter.

In the Alföldi or Great Hungarian Plain, as mentioned above, there was a virtual absence of curvilinear designs in the pottery of the early phase both in the painted and incised ware. In the middle and later phases of the culture this predominance of rectilinear patterns, for example meanders, continues, especially in the incised ware; in the east of the Alföldi, centred on the region near Debrecen and Nyíregyháza, in the middle phase, the painted ware developed and increased in importance, whereas incised decoration decreased; this was the black on buff ware, developed in this region from the fine black on red-slipped ware of the early phase, and the patterns employed consisted of parallel thick and thin lines in curvilinear designs, such as those from Sátoraljaújhely (Tomba, 1929,22). In the later phase of the Linear Pottery culture in this region, the painted ware developed in the culture known as the Herpály, to the complete exclusion of incised ware; the painted patterns reverted to predominantly rectilinear designs of many thin parallel black lines close together on a buff background painted before firing (Kutzian, 1963, 249, 301; Korek and Patay, 1956, 23-42).

In a more central part of the Alföldi, there was a development in the later phase of the Linear Pottery culture of pottery painted after firing with red and white paint in rectilinear patterns, such as that seen at Tisza-polgár (Csöszhalom)nr. Nyíregyháza (Kutzian, 1963, 301; Tompa, 1929, Pl.LV, LVI).

Apart from these areas of E. Hungary, however, the dominant or exclusive method of decoration of pottery in the Linear Pottery culture was incising. In the west part of the Alföldi, and especially in the middle Tisza valley, the middle phase of the Linear Pottery culture is distinguished by a development of incised rectilinear patterns, for example meanders, and by some curvilinear patterns (Tisza I). The patterns of this middle phase, as seen in the pottery of Szegvár (Tüszkőves) (Material unpublished in Szentes Museum) are relatively uncomplicated and the lines are far apart and in groups of not more than 4-6. However, in the later stages of the culture (Tisza II) a trend towards complicated closed meanders, consisting of bands of up to 10 lines may be seen as in the majority of the pottery from Kökenydomb (Banner, 1929). In both phases of the culture there seems to have been a certain amount of painting in red after firing on the matt surface of the pottery in between the incised lines.

In the lower Tisza valley this method of painting after firing was employed and is one of the characteristics of the middle phase of the Linear Pottery groups in this region (Szakalhat-Lebő). The method was not identical to that of the middle Tisza valley since the pottery itself was much finer and given a smooth burnished surface; this surface was decorated by incised lines especially in curvilinear designs developed from the early phase of the culture; between the lines a band of unburnished matt surface was left, and after firing this was



covered in red paint. The less fine ware of this region was decorated by simple incised meanders as in the Tisza I group, or by incised "winkelband" designs which occur in the Vinča-Tordoš culture: this is a band or stripe made up of two incised lines with stab marks in between them. In other parts of south-east Hungary, such as the site of Gorzsa (Cukor tanya) the pottery of the middle phase of the Linear Pottery culture is not decorated in the red-on-matt painted style but forms an individual group with simple incised rectilinear patterns (Gazdapusztai, 1963, 21-76; Korek, 1960, 52).

In the later phase of the Linear Pottery culture, as mentioned in previous chapters, the decorative style of the middle Tisza valley, consisting of complicated rectilinear incised patterns (Tisza II) expanded in popularity northwards and southwards including the lower and part of the upper Tisza valley.

In N.E. Hungary/S.E. Slovakia, on a basis of the simple curvilinear and rectilinear incised patterns of the early phase of the Linear Pottery, the development of a style of incised decoration can be seen in the stratified cave sites such as Domica and Ardovo (Lichardus, 1964, 852; li62, 47-56) consisting of round-arched patterns made by bands of 4 or 5 lines in the middle phase of the Linear Pottery culture (Pre-Classical Bükk culture), and culminating in the sophisticated pointed arch patterns made by bands of up to 15 parallel lines very close together of the late Linear Pottery culture (Classical Bükk culture). The incised lines of the pottery of the late phase are very fine, and thin and made with a V-shape cross-profile, whereas those of the middle phase are wider, 1 - 2 mm. wide, and with a wider V-shape cross-profile. It has been suggested that the development of the decorative style of the Bükk pottery was so sudden, elaborate and exceptional in the general development of the Linear Pottery decoration



that it must have been stimulated by more than the prototypes in the early phase of the Linear Pottery culture in this region, for example by the pottery of the early Boian and Vadastra cultures of south Rumania.

However, the elaborate Bükki pottery is restricted very much to the settlements in the Carpathian region, and shows few relationships with any outside cultures except the Linear Pottery cultures of the middle Tisza valley and those of W. Slovakia and S.E. Poland (Barta, 1960, 14-15; Lichardus, 1962b 85-99; 1963, 5-25; Kulczycka and Kozłowski, 1960, 41-54). Also the development in the Bükki culture of more and more complicated, elaborate patterns made by thinner and thinner lines with increasing proximity and quantity, follows a general trend in the development of decorative styles seen in the Linear Pottery cultures of East Hungary and the Tisza valley as described above.

In the central province of the Linear Pottery cultures: W. Hungary, E, Austria, S.W. Slovakia, and Moravia, decoration of the pottery consists of simple rectilinear (including meanders) and curvilinear (including spirals) patterns made by a single wide line, or, less commonly, a double or treble line (Tichý, 1960, 427-430; 1962, 272). The beginning of the middle phase of the Linear Pottery culture in this region is marked by the development of incised lines broken by round impressions giving rise to the name "notenkopf" style of decoration; this development seems to have taken place predominantly in Moravia as seen in the sites of Brničko nr. Olomouc (Material unpublished in Olomouc Museum) and Nova Vés nr. Rošice (Tichý, 1960, 433 ), and to a certain extent in E. Bohemia for example in the recently discovered settlement "T" at Bylany (Discussion with Soudský at Bylany in April 1965); it is possible that a similar early stage in the development of the "notenkopf" decoration will be found in the W. Hungarian

sites after more intensive excavation in that area.

The early "notenkopf" decoration consists of very similar patterns to those of the early Linear Pottery designs, but the end of each line and occasionally the middle of a line is broken by round indentation; in this early stage the indentations are relatively large -- 5-8 mm. in diameter -- and the lines are wide ( 2 - 3 mm. wide), but in the middle and late phases of the Linear Pottery culture of this region, there is a tendency towards thinning the lines and increasing their proximity, though not so much their quantity, and towards a diminishing size of the round indentations, so that in the late phase their average diameter is 3-4 mm.

A variation in the "notenkopf" style which occurs especially in the middle and later phases of the settlements of S.W. Slovakia and W. Hungary and E. Austria is the so-called Želiezovce style or culture. This decoration consists of bands of three or four parallel incised lines which are interrupted by lens-shaped indentations approximately 1-2.5 cm. long. The area between the lines is often left unburnished and decorated with red and yellow paint after firing in the same manner as the pottery of the "Tisza culture" and Szaká-lhát-Lebő group. The Želiezovce style of decoration very rarely occurs by itself on a site, but nearly always with pottery decorated in the "notenkopf" method. (Pavúk, 1962, 5-20).

In Bohemia and E. Germany (Saxony) there are a few sites where pottery decorated in the earliest Linear Pottery style with a simple single line occurs, such as Nový Bydžov, and Bylany in Bohemia (material unpublished in the Institute of Archaeology research centre at Bylany) and Dresden (Nickern) in Saxony (Baumann, 1960, 95-138). However, most of the early Linear Pottery of this

region belongs to the period immediately after the initial expansion of the agriculturalists to this region, and is represented by the decorative style known as the A-style or Ačkovy style, which consists of curvilinear patterns made up of a band of three broad parallel lines.

At a period contemporary with the beginning of the development of the "notenkopf" style in Moravia, a quite different development in decorative style was taking place in Bohemia and E. Germany; this appears to have been a development out of the A-style of decoration and consists especially of curvilinear patterns similar to those of the A-style, but including more true spirals, formed by a broad band of two parallel lines with rows of stabs or dots in between them; at Bylany this style is known as "pattern 200", and is especially typical of the beginning of the middle phase of the Linear Pottery culture in this region. It is a very similar method of decoration to the contemporary "winkel-band" style of the Vinča-Tordoš culture, except that in the Linear Pottery culture the long oblique stabs are characteristic of the early stages of this style, whereas in the Vinča-Tordoš culture direct round dots predominate in the bands, as well as rectilinear patterns. (Milojčić, 1949, 72-73). It seems in this case, therefore, that two superficially similar decorative styles evolved contemporaneously but from different prototypes.

In the middle and later phases of the Linear Pottery culture in this region, the "notenkopf" style of decoration, which, as mentioned above, had evolved in E. Bohemia and Moravia, predominated in the decoration of the pottery of Bohemia, although not in Saxony, where it occurs in an equal proportion with the more evolved forms of "pattern 200" which will be discussed below. The "notenkopf" decoration of Bohemia differs from the "notenkopf" of the central

province of the Linear Pottery cultures in that the indentations of the lines are not round, as was the rule in Moravia etc., but tended to be crescent-shaped, lens-shaped or, in the late phase, flat.

In W. Germany and Holland the earliest style of incised decoration does not occur, but the A-style, which is slightly later, consisting as mentioned above, of three parallel lines in curvilinear patterns, is seen on a number of sites in Hessen and the middle Rhine valley, such as Friedberg (Quitta, 1960, 30-31). From the simple band of three lines, there is a quick development towards dots or stabs in between the lines, as is seen especially in the earliest sites of the Linear Pottery culture in the Lower Rhine valley including Köln (Lindenthal) (Buttler and Haberey, 1936, 115) and Geleen in Dutch Limburg (Waterbolk, 1959, 155). Thus at the beginning of the middle phase of the Linear Pottery culture in this region a similar decorative style to that of "Pattern 200" of Bohemia occurs, but in Bohemia this pattern is more or less replaced during the middle and later phases of the culture by a style based on the "notenkopf" patterns, whereas in E. Germany, W. Germany and Holland, the basic style of a band made up of two or three parallel lines filled in with dots and stabs is retained and elaborated. Although the "notenkopf" style of decoration is very rarely seen in its central European form in the sites of west Europe, lines interrupted by crescentic or flat indentations do occur as incidental elaborations of the basically "filled-in bands" style or "evolved A -style" of decoration.

In the later phases of the Linear Pottery culture in E. Germany, W. Germany and Holland, a tendency towards a widening of the bands, and an increase in the proximity and quantity of dots or short oblique stabs between the lines



may be seen and there is the appearance of ladder patterns with lines perpendicular to the long side lines filling the bands instead of dots and stabs.

(Böhmers et al., 1959, 229).

The pottery of the post-Linear Pottery cultures in this region such as the Rössen and "Stichbandkeramik" cultures clearly represent a continuation in the evolution of the decorative styles of the latest phase of the Linear Pottery cultures in the western and west-central province. On the one hand, in Bohemia, apart from the local development of painted Šarka ware, the final stage in the evolution of the "notenkopf" style of decoration shows lines in rectilinear and spiral designs, broken every 5 mm. by a short line, 3-5 mm. long; in Germany and Holland on the other hand the last stage in the evolution of the "filled in band" design shows wide bands filled in with hundreds of very small dots and stabs. The pottery of the post-Linear Pottery cultures shows a complete break-up of these designs by the disappearance of the basic long curvilinear or rectilinear lines, which are the distinguishing feature of the decoration of the Linear Pottery cultures from the beginning to the end of its development, and the retention of the previously secondary components of the design: that is, the dotted interior of the bands and the small lines or evolved "notes" of the "notenkopf" lines.

The decoration of the pottery of the Linear Pottery cultures of S.E. Poland, the Ukraine and Moldavian SSRs and N.E. Rumania (Moldavia), which represent an expansion of the culture from the central province (Moravia, S.W. Slovakia, W. Hungary) is clearly very closely related to the decoration of the Moravian and W. Slovak pottery.

In Poland, there are occasional instances of pottery decorated in the

simple style with single, double or treble banded patterns of the earlier phases of the culture such as at Bienczyce (Hachulska-Ledwos, 1963, 75-103) and Zofipole (Kulczycka, 1961 ). The majority of Polish sites have pottery with decoration the same as that from the middle phase of the Linear Pottery culture of Moravia and W. Slovakia, consisting of curvilinear lines interrupted by round or oval indentations in the "notenkopf" decoration, there are sherds decorated in the Želiezovce style of W. Slovakia and W. Hungary described above, and sherds decorated in the style of the middle phase of the Linear Pottery culture of S.E. Slovakia/N.E. Hungary (Pre-Classical phase of the Bükk culture).

The decoration of the pottery of the Ukraine and Moldavian sites is typologically later than that of the Polish sites, including more careless decoration where the dots do not always interrupt the lines but miss them, and the patterns which include a high proportion of rectilinear designs are often muddled as if the original model had been forgotten and an attempt was made to reproduce a design which was not fully understood. However, basically, the patterns are the same as the "notenkopf" style of Moravia and Poland. The indentations on the lines are very rarely completely round or even oval, but are more often triangular or a narrow lens-shape. (Passek and Chernush, 1963, 32-35; Comşa, 1959, 48-49).

#### 4) Classification systems and Relative Chronologies devised for the Linear Pottery Cultures on a basis of the pottery.

There have been very few analyses of the material from all the regions of the Linear Pottery culture or of the relationships between the different groups with a view to making a relative chronological system which could be applied to the culture as a whole. Nearly every work which has attempted this

has based the system on a detailed analysis of a specific region and then applied this to all regions; a more practical method would be to analyse in detail the material from all regions of the culture and to work out a system (if a system must be devised) on a basis of the mutual relationships between the various groups.

This was attempted to a certain extent by Milojčić, in his system of chronologies for all the neolithic cultures of Central and South-East Europe (Milojčić, 1949). Taking the stratigraphies of Starčevo and Vinča as a fixed base, he divided the Linear Pottery culture of north and west Hungary into a late and an early phase, the latter being contemporary with the early Starčevo culture and partly with the Körös culture, and the former being limited to West Hungary and contemporary with the later Starčevo culture and the earliest Vinča culture (Vinča A); while the Želiezovce culture of West Hungary represented the latest development of the Linear Pottery culture being contemporary with the Vinča-Tordoš (Vinča B) culture. In N. Hungary, the development of the Bükk culture is contemporary with the later Linear Pottery culture and Želiezovce culture of W. Hungary. East Hungary is treated as a single entity, without differentiation between north and south or Tisza valley and Alföldi; the earliest neolithic development in this area is represented as the Körös culture which begins later than the Starčevo culture and continues contemporary with Vinča A. The reason for the hypothesis that the beginning of the Koros culture is so much later than that of the Starčevo culture is discussed in connection with the problem of painted pottery in Part I, Chapter 2. The Tisza culture which evolves in this area after the Koros culture is divided into an earlier and later phase, the former being contemporary with the Želiezovce and Classical Bükk cultures and the latter



being contemporary with the beginning of the Vinča-Pločnik culture (Vinča C), that is after the Linear Pottery culture of West and North Hungary. Thus the only Linear Pottery referred to by Milošević is that of West Hungary; in north Hungary the incised pottery is referred to as the Bükk culture, and in East Hungary as the Tisza I culture. (Milošević, 1949, 90-94).

The system of a later and earlier phase of the Linear Pottery culture is applied by Milošević to the similar pottery in Moravia and Bohemia (Milošević, 1949, 95-96) and in central and north-west Germany (Milošević, 1949, 97, 104), but with very little detail or differentiation in the various regions. The detail in his work is reserved especially for the more southern regions.

With reference to the Linear Pottery cultures of Hungary, the earliest chronology which had been worked out by a detailed analysis of the material was that of Tompa who also applied his system to the material of Moravia and Bohemia, although the work is based on the material of the sites of east and north-east Hungary (Tompa, 1929, 61-65). Tompa did not differentiate between any regions in Hungary but considered the development to be uniform throughout the country. He divides the Linear Pottery into an earlier and later phase, the former being represented in Hungary, Moravia and Bohemia. The later development of the Linear Pottery culture, following Stocky's classification which is mentioned below, is represented in Moravia and Bohemia, but in Hungary it is superseded by the earliest stage in the development of the Bükk culture, including a short transitional Proto-Bükk phase and Bükk I. The Bükk II and III phases are regarded as contemporary with the early and late phases respectively of the "stichbandkeramik" culture in Moravia and Bohemia. The development of the Bükk culture is followed immediately by that of the



Tisza culture, divided into two phases, with incised ware dominant in the early phase. contemporary with the late phase of the Linear Pottery culture in Moravia.

Since this great work there has been very little published research in the early neolithic material of Hungary, let alone any chronological systems. The most important recent work in the early neolithic cultures of N.E. Hungary/S.E. Slovakia has been carried out by Lichardus who has classified the material of the early Linear Pottery culture and its later developments (Bukk culture) on a basis of the material from the caves of Domica/Aggtelek, Ardovo, and Čertova Diera, and open settlements such as Barca I and III (Lichardus, 1962, 55; 1963, 5-25; 1964, 841-881). Lichardus distinguishes a very early Linear Pottery phase (Ia) as seen in the black on red painted ware at Domica, and a slightly later incised Linear Pottery phase (Ib) as seen in Barca III. In the next phase he distinguishes a later Linear Pottery (II) as seen in Ardovo and Čertova Diera in association with a very early phase of the Bükk culture (A) which he regards as being a separate development, although the criteria which differentiate the late Linear Pottery from the Early Bükk pottery are not at all distinct (Lichardus in discussion at Nitra May 1964). The next phase sees the development of Pre-Classical stage of the Bükk culture (AB 1), contemporary with the middle phase of the Linear Pottery culture in Moravia, and associated with a late type of Linear Pottery (III) which is distinguishable from the Pre-Classical Bükk designs in consisting predominantly of rectilinear patterns, including some which are reminiscent of "Tisza I" and Želiezovce styles. This problem, however, will be discussed in a later chapter concerning the Linear Pottery culture of this region. A later stage of the Pre-Classical Bükk style as seen in Domica layer II is no longer associated with "Linear Pottery" (AB 2) but is a transitional stage towards the

fully-developed or Classical Bükk culture (B 1,2 and 3) which Lichardus supposes to be contemporary with the late phase of the Linear Pottery culture in Moravia.

The methods of classifying the Linear Pottery culture in Czechoslovakia have been summarised by Soudský as an introduction to his own classification which is based on the Bohemian (W. Czechoslovakian) material. (Soudský, 1954, 75-86). The Moravian/W. Slovak material was first analysed in detail by Palliardi who distinguishes three phases: an early phase with simple spirals and meanders made by wide lines, a middle phase consisting of all pottery decorated in the "notenkopf" style, and a late phase including bands filled in with strokes and dots, the true "stroke-ornamented ware" (Stichbandkeramik), and plastic decoration. (Palliardi, 1914, 256-277).

In discussing the west Slovak material Eisner classes the small amount of Linear Pottery material then excavated from W. Slovakia under Palliardi's "late phase", including the Želiezovce type of decoration, (Eisner, 1933, 14-17). Since then, Pavúk has worked on the new material excavated in W. Slovakia, such as that from Hurbanovo, and has recognised an earlier phase of the Linear Pottery culture with simple patterns of spirals and meanders made by two or three parallel lines; at the end of this phase and the beginning of phase 2 the early "notenkopf" style of decoration appears and predominates in Phase 2, which Pavúk equates with Vinča A in Yugoslavia. Phase 3 is marked by the appearance of the Želiezovce type of decoration, divided into 3a and 3b; in 3a the notenkopf style of decoration exists side by side with the Želiezovce style; this sub-phase has been equated chronologically with the early Tisza culture, the Classic phase of the Bükk culture and Vinča B. In sub-phase 3b the Želiezovce style excludes the "notenkopf" style, and shows internal development such as a predominance of painting after baking on the matt surface in

between the lines; Pavúk suggests that in this phase the Želiezovce style of pottery represents a separate culture, although there is no change in the material culture except for the pottery, and it should perhaps be regarded more as a final development of the Linear Pottery culture in this region, just as Tisza II in Hungary and Šarka in Bohemia. (Pavúk, 1962, 17-18).

Since Palliardi, the Linear Pottery of Moravia has been analysed especially by Tichý, who being a great advocate of the close relations between the Körös and Linear Pottery cultures, sees the earliest phase of the Linear Pottery cultures as a mixed Körös-Linear Pottery culture, contemporary with Starčevo II (Tichý, 1960, 435-437). He divides the earliest phase into Ia and Ib (Oldest and Older), the former consisting predominantly of coarse ware decorated by warts and lugs and plastic bands impressed with finger marks; but, as mentioned above, in connection with the decoration of coarse ware, there is only the similarities of this ware with the Körös pottery of south-east Hungary to suggest that the coarse rusticated chaff-tempered ware represents a separate very early phase of the Linear Pottery culture and not merely the kitchen ware associated with what is normally regarded as the earliest Linear Pottery, i.e. the early incised ware. This incised ware with simple wide lines in curvilinear and sometimes rectilinear patterns on chaff-tempered fabric makes up Tichý's Phase Ib, as seen in the material from Žopy. Phase II (younger phase), is also divided into IIa and IIb, the former consisting of the initial stage in the development of the "notenkopf" style of decoration and the latter continues the development; phase II is regarded as contemporary with the early Tisza culture and all of the Bükk culture in Hungary. Phase III (youngest and late phase) consists of the late development of the "notenkopf" style of decoration, contemporary with the late Tisza, and Želiezovce groups. (Tichý,



1960, 437; 1962, 287-295).

The first classification on a basis of the material of the sites in Bohemia was made by Jirá who distinguished three phases in the development of the Linear Pottery culture of Bohemia: I(early) including pottery decorated in the so-called "ačkovy style", that is, simple curvilinear (spiral) patterns made of a band of three broad parallel lines; II (middle) bomb-shaped pots decorated with volutes and spirals including the "notenkopf" style; III (latest) including pottery decorated with bands filled with strokes, and painted pottery (šarka type) (Jirá, 1910, 81-82; 1919, 226-254).

On a basis of excavations in the stratified cave sites of the Beroun valley in W. Bohemia in the mid-1920s, two important works appeared: those of Stocký and Axamit. Axamit's work was based on excavations of the site of Tetin; here, the stratigraphy in two parts of the cave showed a development in the Linear Pottery from bowls decorated in the "ačkovy" style with simple patterns of three parallel lines, to a middle phase with bomb-shaped pots decorated in the "classical" style with spirals and volutes broken by small indentations; and a late phase with more pear-shaped vessels decorated by stroked patterns, or bands with strokes between the lines forming "ladder patterns", and painted ware (šarka type). Thus Axamit's excavations more or less supported the classification system of Jirá (Axamit, 1924; 1928-30, 115; Soudský, 1954, 77-82).

Stocký's excavations in the cave of Srbso showed a similar stratigraphy, except that the early phase with the "ačkovy" style was missing. Therefore, Stocký's earlier and later phases correspond to Jirá's Phases II and III, except that in his earlier phase there are no painted sherds of the



Sarka type, but only in the later phase. (Stocký, 1926, 46-63; Fig.77).

On a basis of re-assessment of the material of these sites, and new sites such as Postoloprty and other Linear Pottery material in Bohemia, Soudský attempted a new more detailed analysis and classification laying special stress on the "Ačkovy" style of S-patterns made of three simple parallel broad lines as the basic decorative style of his older phase, which at this time he regarded as the earliest Linear Pottery in Bohemia. The middle phase of the Linear Pottery as seen at Postoloprty includes simple incised designs and a certain amount of pottery decorated in the "notenkopf" style, but the dominant style consists of bands filled with stabs or dots; the younger phase of the Linear Pottery culture in Bohemia continues the development of the "notenkopf" style of decoration which becomes dominant in this and the late phase. In West Bohemia Soudský distinguished the Sarka painted ware as a purely local development. (Soudský, 1954, 89-100).

This classification system was opposed by E. Neustupný who advocated the addition of a fifth phase at the beginning of the sequence, that is before Soudský's early (Ačkovy dominated) phase. Neustupný's Phase I includes the so-called Starčevo-Körös elements, and decoration by incised lines more than 4 mm. wide in simple patterns made by one, two or three parallel lines, as seen in the S. Moravian sites. Phase II is equated with Soudský's early phase and consists of pottery decorated in a more developed form of the simple incised lines: the "Ačkovy" style. Phase III is equated with the first part of Soudský's Middle Phase and includes the pottery decorated by bands filled with stabs and dots (Pattern 200), and by the early development of the "notenkopf" style in E. Bohemia and Moravia. Phase IV is equated with the second half of

Soudský's Middle Phase and includes the main stage of development of the "notenkopf" style in Bohemia and Moravia. Phase V is equated with Soudský's Younger phase and consists of the late development of the "notenkopf" style and the Šarka painted ware in central Bohemia. (Neustupný E., 1956, 392-399). The early phase (I) is synchronised with Vinča A and phases II - IV with Vinča B1 and phase V with Vinča B2, but these synchronisations are based more on isolated elements in the Linear Pottery culture which resemble superficially elements in the cultures further south, such as the figurines and the similarity between the "winkelband" decoration and "pattern 200".

Soudský has, in his turn, opposed this classification of Neustupný's, since he is against putting "pattern 200", (the bands filled with dots and stabs), into a separate phase, for this style of decoration never occurs by itself and must represent a transitional style in Bohemia between the "Ačkovy style" and the developed "notenkopf" style. He agrees that it might be possible later to subdivide his middle phase, but he does not agree to the subdivision of his early phase. (Soudský, 1956, 408-12). The most recent classification and chronological system of Soudský will be discussed at the end of this section.

The material of the Linear Pottery culture of Central Europe as a whole, including Germany and Czechoslovakia, was discussed soon after the publication of Stocký's and Axamit's classifications by Jenny, who suggested that the oldest Linear Pottery was in "Sudetenland" or Bohemia and Moravia and that the Linear Pottery of the Rhineland and the upper Danube was later (Jenny, 1928, 36-61). There were others who classified the material of specific parts of Germany such as Butschkow (1935, 160) in Central Europe and Koehl (1914, 53) in south Germany, but the most important work on the west European Linear Pottery

culture was done after the publication of the excavation of Koln(Lindenthal).

In the report of Koln (Lindenthal) Buttler classifies the pottery into four phases (Buttler and Haberey, 1936, 116-118) which he later reduced to three and applied to the rest of central Europe (Buttler, 1938, 25-28, Pl.13, 14). Phase I (earlier phase) includes pottery decorated in the so-called Flomborn style, this is the developed form of the "Ačkovy" style of decoration of Bohemia. The difference between them is that the Flomborn style tended to incorporate later features, such as "notenkopf" indentations at the end of a line or between the lines, or stabs in between the lines. Basically the patterns were S-shaped, spirals or occasionally meanders, made by three parallel lines. Phase II (Younger or Transition phase) includes pottery decorated in the "notenkopf" style of Bohemia and Moravia, but the majority of decoration is by evolved forms of the Flomborn style consisting of spirals and S-patterns of bands filled with stabs and dots. Phase III (Latest Phase) consists of pottery with decoration by very wide incised bands filled with hundreds of dots or stabs, also a style in which the solid lines are replaced by a line formed by a series of tiny strokes which represents a style transitional between the Linear Pottery culture and the early phase of the "stichbandkeramik" culture.

Since Buttler's work there was very little classification of the German material until the recent analysis of Quitta, which concentrates especially on the earliest phase of the Linear Pottery culture in Germany, and to a certain extent Czechoslovakia, and Hungary. In his work he recognises five phases of the Linear Pottery culture; these more or less follow the



terminology of Neustupný. The oldest Linear Pottery phase is characterised by simple single lined incised decoration as seen in Moravia, and recently in Bohemia and Saxony. An older Linear Pottery phase consists of the pottery decorated in the treble-lined Ačkovy style. There is a middle phase and later phase with the development of the "notenkopf" style in Bohemia and Moravia and the evolved "pattern 200" styles with filled-in bands in Germany; and a latest phase consisting of transitional decoration towards that of Stichbankkeramik in the western part of the culture. He regards the whole development of the Linear Pottery culture as contemporary with the Vinča-Tordoš culture in Yugoslavia, and contemporary with the development of the Tisza and Bükk cultures in Hungary. (Quitta, 1960, 153-188; 1962, 101).

In a specialised analysis of the Linear Pottery culture in S.E. Germany (Saxony), Hoffman has distinguished four phases of the culture with phase 1 being identified with Soudský's early phase with predominantly simple single, double or treble lined patterns including the "Ačkovy" style. Phases 2 and 3 see the introduction, development and elaboration of the filled-in bands style (pattern 200), as well as the comparatively sporadic appearance of the "notenkopf" style. Phase 4 consists of a break-up of these Linear Patterns towards those of the "Stichbandkeramik" culture. (Hoffmann, 1963, 84-90, Pl. 37-39).

The pottery of the western province (W. Germany and Holland) has also been analysed and re-classified recently. On a basis of the material from the Dutch sites of Elsloo, Sittard and Geleen, Waterbolk and Modderman have classified the Linear Pottery of the lower Rhine valley into 3 phases each sub-divided into two sub-phases. Phase 1a includes pottery decorated in a



similar way to the "Ačkovy" style although perhaps a little later since there are occasional stabs in the bands. Phase 1b is a development of this triple-lined style of decoration with elaborations by "notes" at the ends of lines or in the bands, as in the Flomborn style. Phase 2a and b shows a general development and elaboration of these features with an increase in the filled-in band type of decoration, as well as "notenkopf" although this is relatively infrequent. Phase 3a and b includes the late developments, as seen in Buttler's classification, such as very wide bands filled with a large number of tiny dots, and some decoration consisting only of stroke-patterns (Bohmers, Bruijn, Modderman and Waterbolk, 1959, 229).

A similar detailed analysis of the pottery has been made at Müddersheim nr. Köln by Schietzel, although this material is only from the later phases of the Linear Pottery culture of the lower Rhine, corresponding probably to Modderman and Waterbolk's phases 2b - 3b (Schietzel, 1965, 72-96).

The Linear Pottery of Poland, USSR, and Rumania has been analysed with a varying degree of detail. Milošević attempted to synchronise them with the neolithic cultures of south-east Europe on a basis of the Linear Pottery imports in the Vinča culture (Milošević, 1951, 110-124). However, the Linear Pottery of Poland and the upper Dniester basin has very rarely been analysed in relation to the Linear Pottery cultures of central and western Europe, except in studies which relate specifically to Poland, the Ukraine and Moldavia (Kulczycka, 1964; Passek, 1962, 130-132; Passek and Chernush, 1963, 34-39; Comşa, 1959a, 50-57). Comşa synchronised the earliest Linear Pottery in Rumania and the USSR with a period just before the beginning of the Boian and Pre-Cucuteni cultures lasting until the end of the first period of those cultures;

TABLE II

1	11	12										
2	21	22			23	24	25	26	27	28		
3	31	32			33	34	COMBINATIONS				LADDERS	VARIATION
4	41	42			43	44	45	46	47	48	49	
5	51	52			53	54	55	ST ABSTRACTION				
6	61	62			63	64	65	66				

DECORATION OF THE LINEAR POTTERY

TABLE 12

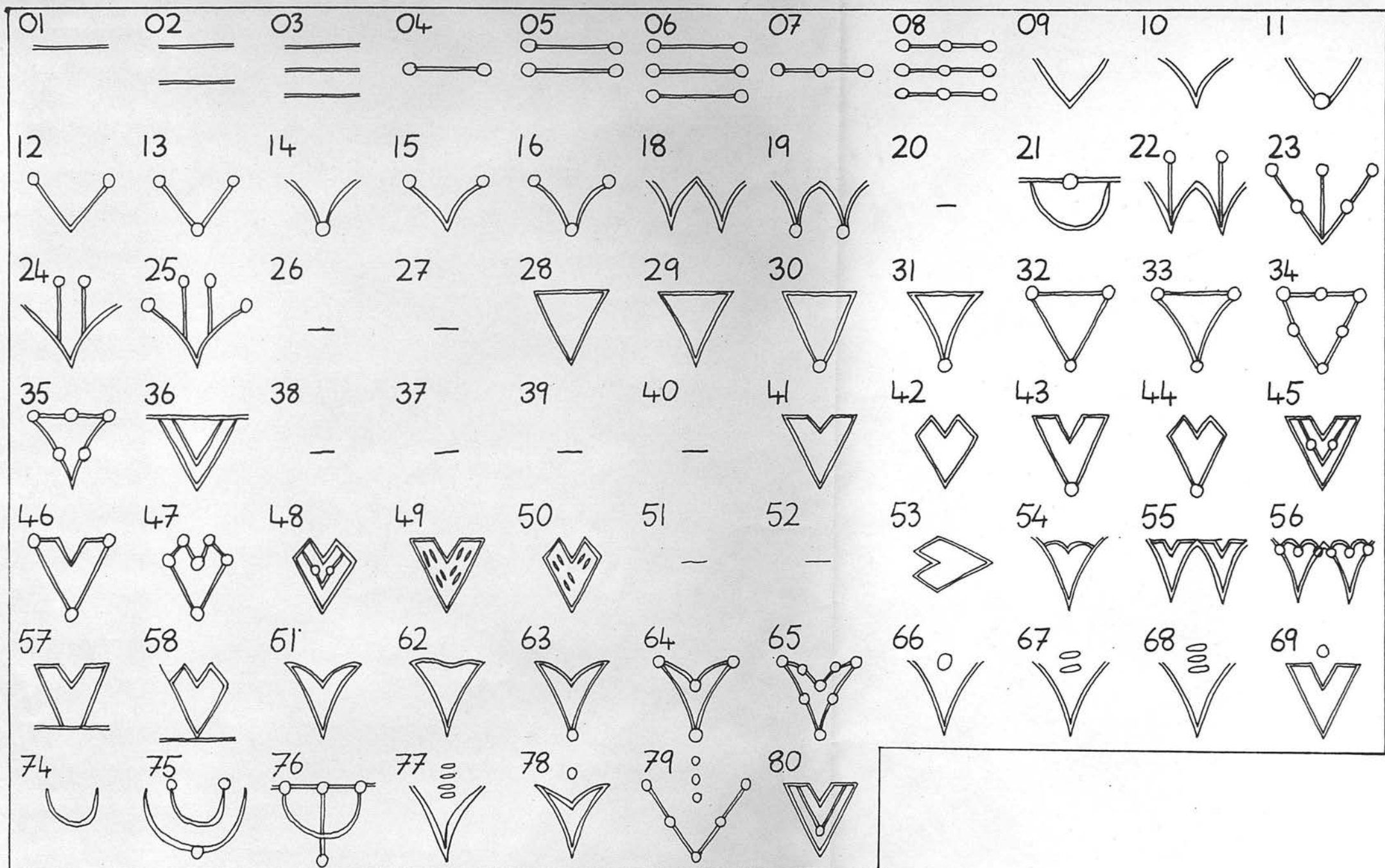
1	111	112	119							
2	211	212	213	214	215	219	229	271	272	273
	274	275	276	277	278	281	282	283	284	291
	201	202	203	204	205	209				
3	301	302	312	313	319	321	322	332	332	342
4	401	402	403	404	405	406	407	408	419	429
6	601	602	603	DECORATION OF LINEAR POTTERY 2ND ABSTRACTION						



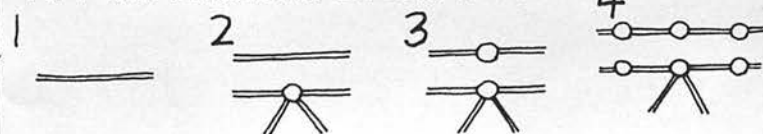
TABLE 13.

1	1001	1002	1003	1004	1005	1006
	1007	1008				
2	2001	2002	2003	2005	2006	2007
3	3001	3002	3003	3004	3005	3006
	3007	3008	DECORATION OF THE LINEAR POTTERY 3 <sup>RD</sup> ABSTRACTION			





RIM AND MARGINAL DECORATION



DECORATION OF LINEAR POTTERY

SUPPLEMENTARY PATTERNS

TABLE 14

thus the Linear Pottery cultures in these regions would be contemporary approximately with the Vinča-Tordoš culture of Yugoslavia.

To return to Bohemia, the most recent chronological and classification system of Soudský will be discussed. Although this is based on the statistical analysis of the pottery of Bylany, the statistical system has been so devised that it can apply equally to the Linear Pottery cultures of all regions. The pottery of all regions has been analysed, and the methods of decoration, form and texture of the pottery have been broken down into abstracts suitable for such a statistical analysis. As mentioned in Part II, Chapters 1 and 2, this system has been used to distinguish various phases of settlement at Bylany by recognising pits, and therefore houses, with the same percentages of the various decoration styles. By April 1965, 14 phases of Linear Pottery settlement had been recognised at Bylany including the earliest and latest phases of development of the Linear Pottery culture.

On a basis of these 14 phases at Bylany, as well as evidence from other recently excavated settlements, or recently excavated settlements, or recently examined material, not only in Bohemia, but also in Moravia, Slovakia and Hungary, Soudský has devised a detailed classification of the Linear Pottery cultures in Bohemia consisting of 4 phases: the earliest phase (I) is subdivided into Ia which is not represented at Bylany but has recently been recognised at the sites of Nový Bydžov in Bohemia, and Eitzum in Saxony and Žopy in Moravia, and Ib which includes the main phase with Ačkovy style of decoration; this phase has been recognised at Bylany in settlements F/G (Discussion with Soudský May 1964 at Bylany), and at Močovice, Mohelnice and numerous other sites in E. Germany, Bohemia and Moravia (the Hungarian, Slovak,

and Austrian material is not included in this discussion). This phase is contemporary and identical with the early phase of the Linear Pottery culture in Hungary etc.

The middle phase (II) is divided into a pre-optimal, optimal, and post-optimal sub-phase, and is characterised by a great increase in the quantity of "pattern 200" (filled-in bands), which predominates over the decreasing Ackovy style and the embryonic "notenkopf" style until the post-optimal sub-phase when "pattern 200" decreases and the "notenkopf" style increases. This phase is roughly contemporary with the middle phase of the Linear Pottery culture in Moravia and W. Slovakia (early notenkopf) and N.E. Hungary/S.E. Slovakia (Pre-Classical Bükk).

The later phase (III) is characterised by a predominance of the "notenkopf" style in the decoration. The degeneration and disintegration of the "notenkopf" elements described above are especially characteristic of the latest phase (IV), as is the appearance of the painted Šarka ware.

Only one period of settlement has been recognised so far in the early phase of the Linear Pottery culture at Bylany; 8 periods of settlement have been recognised in the middle phase; 2 in the later phase and 3 in the latest phase. (Soudský, 1960, 14-35; 1962, 191-195).

### Summary

Close similarities may be seen in the forms and fabric of the pottery between the coarse ware and, to a certain extent, the fine plain ware of the Körös and Starčevo cultures and the pottery of the early phase of the Linear Pottery cultures. The basic form and fabric of the pottery of the early Linear Pottery cultures is soft orange/buff chaff-tempered ware, formed into

pedestalled hemispherical or  $3/4$  spherical bowls, cylindrical necked bottles and flat or disc-based hemispherical bowls etc. All these forms have their prototypes in the early neolithic cultures of south-east Europe.

The incised decoration of the pottery of the early Linear Pottery culture, however, seems to represent a local development, caused by an impoverishment of the material culture or instability of settlement; it is possible that the patterns employed in the incised decoration were inspired by the patterns painted on the fine ware of the Starčevo and related cultures.

Painted decoration on fine ware of a very similar type to that of the Starčevo culture is associated with early chaff-tempered incised ware in E. Hungary and N.E. Hungary/S.E. Slovakia; it survives in the eastern part of the Alföld, into the middle and later phases of the Linear Pottery culture when it is responsible for the development of a very individual type of painted ware which, as will be shown in Part IV, had a very important effect on the later neolithic cultures of south-east Europe, especially Rumania.

The basic pottery of the early Linear Pottery culture is incised with bands of one, two and, slightly later, three broad parallel lines; the latter is known as the "Ačkovy style". In association with typical Körös pottery forms, there also appear, possibly slightly later, bi-conical bowls with a sharp-angled profile which must be closely related to those of the Vinča-Tordoš culture. It is possible that this form is partly responsible for the development of the typical Linear Pottery forms of  $3/4$  spherical and bomb-shaped pots, because, during the middle phase of the culture it can be seen that the sharply-angled biconical profile becomes progressively more rounded.



Parallel with this development towards a predominance of rounded globular pot-forms with round bottoms in the middle phase, there is a disappearance of chaff-tempering in the fabric and a predominance of fine mica-inclusions; the pottery is grey in colour and has a fine smooth surface; associated with this better surface is a development of more sophisticated incised decoration. The simple incised patterns of broad parallel lines had two main paths of development in this phase:

a) in Moravia, W. Slovakia, E. Austria and W. Hungary, there was the development of spiral or rectilinear lines interrupted by indentations, called the "notenkopf" style; in this phase the indentations are far apart round and large. This style later appears in Poland, the USSR and Rumania and in Bohemia, but it is comparatively infrequent further west. In W. Slovakia, W. Hungary and E. Austria a style known as Želiezovce<sup>v</sup> was a local development from the "notenkopf" style.

b) in Bohemia, E. Germany and W. Germany and Holland the tendency was to retain the band idea made up of two or three parallel lines, and to fill the band with dots or stabs. In this middle phase the filling consisted of dots or stabs placed fairly wide apart, often in rows, although not always. Although this style (known as Pattern 200) was replaced in Bohemia by the "notenkopf" style, the filled-in bands continued to dominate the Linear Pottery decoration of Germany and Holland.

The late phase of the Linear Pottery culture shows a coarsening of the fabric with larger mineralogical inclusions and a rougher surface of the pottery; in the more western provinces there was a tendency towards pear-shaped or bag-shaped pots; associated with these developments is an elaboration

TABLE 15

MILOJČIĆ (1949) YUGOSLAVIA E.HUNGARY		LICHARDUS (E.SLOVAKIA/NE.HUNGARY (1963) (1964)		PAVÚK (1962) W.SLOVAKIA	TICHÝ (1962) MORAVIA	NEUSTUPNÝ (1956) BOHEMIA	SOUDSKÝ BOHEMIA (1954) (1962-65) BYLANÝ		QUITTA (1960) C.EUROPE	HOFFMANN (1963) SE.GERMANY	WATERBOLK ET AL. (1969) LOW COUNTRIES
C AB <sub>2</sub> B <sub>1</sub> V A/IV III II I	TISZA II	BUKK CULTURE 3 B 2 CLASSICAL I		III <sub>B</sub> ŽELIEZOVCE	III YOUNGER "NOTENKOPF"	V	LATE IV 12 11 10	LATEST	IV	III <sub>B</sub> A	
	TISZA I	AB <sub>2</sub> LINEAR POTTERY CULTURE		III <sub>A</sub> ŽELIEZOVCE + "NOTENKOPF"	IV	IV	MIDDLE III 9 8	LATER	III	II <sub>B</sub> A	
		AB <sub>1</sub> PRE-CLASSICAL	III	II "NOTENKOPF"	II <sub>B</sub> EARLY "NOTENKOPF"	III	7 6 POST-OPTIMAL 5 4 II 3 2 PRE-OPTIMAL 1	MIDDLE	II	B I A	
		A EARLY	II	I <sub>B</sub>	II <sub>A</sub>	II	EARLY <sup>F/G</sup> I <sub>B</sub>	EARLY			
			I <sub>B</sub> BARCA III	I <sub>A</sub>	I <sub>B</sub>	I	I <sub>A</sub>	EARLIEST			
			I <sub>A</sub> DOMICA I		I <sub>A</sub>						

SCHEMES FOR THE RELATIVE CHRONOLOGY OF THE LINEAR POTTERY CULTURES

and complication of decorative styles mentioned, and a break-up of the essential elements of Linear Pottery decoration, such as the removal of the solid lines.

In N.E. Hungary/S.E. Slovakia and the Tisza valley the fabric of the incised pottery is the same as that of Czechoslovakia, W. Hungary etc., but the forms are generally more sophisticated, probably because of the greater influence from the cultures of south-east Europe. The dominant method of decoration is by incising, and it is very clear that the most important element in the initial development of the decoration of the pottery of these regions is the early incised pottery of the Linear Pottery culture of E. Hungary, and not that of the Vinča-Tordoš culture. It is because of the clear development of these cultures along the Tisza from the Linear Pottery culture of E. Hungary with a certain amount of southern influence that they will be regarded as local groups of the Linear Pottery culture rather than independant cultures. The development of the decorative styles of the pottery of these groups follows a similar course to that of the central European groups, in that from simple incised lines made up of bands of one, two or three parallel broad lines, the patterns become progressively more complicated and the lines become thinner, more numerous and closer together.

The earliest classification systems of the Linear Pottery generally distinguished only an earlier and a later phase. As more material was amassed, however, especially since the war, three, four or five phases have been distinguished. The climax has been in the new system of Soudský, based on the material of Bylany where each period of settlement represents a sub-phase of the Linear Pottery culture. However, the recent classifications of the central and west European material are all similar in that they consist of three

basic periods of development:

a) Early, which has been subdivided variously into Phases I and II, or Ia and Ib, or Earliest and Earlier; the subdivision refers to the difference between the early simple patterns of a single or double broad line, and the slightly more elaborate treble-lined patterns of the "Ačkovy" style.

b) Middle, which has been subdivided into two parts with the name depending on how the early phase was termed, but generally this phase is referred to as II/III or III/IV or Middle/Late (Later). The subdivision is based on the difference between the initial and later development of the "notenkopf" style, or the predominance of "pattern 200" and then "notenkopf", style, or the predominance of "pattern 200" and then "notenkopf", style, or the increase of the Želiezovce style.

c) Late, referred to as Latest, or phase IV or V; it represents the break-up of the essentially linear decoration, and the predominance of local groups such as Šarka in Bohemia or Želiezovce in W. Slovakia etc.

A classification and terminology based on the combination of these systems, especially that of Soudský, will be used in describing the general development of the Linear Pottery cultures in each region in the following Part III.



Chapter II The Middle phase of the Linear Pottery culture	274
1) The Middle phase III	276
2) The lower Middle phase (Hallstatt I)	279
3) The Middle phase (Hallstatt II)	282
4) The Middle phase (Hallstatt III)	285
5) The Middle phase (Hallstatt IV)	288
6) The Middle phase (Hallstatt V)	291
7) The Middle phase (Hallstatt VI)	294
8) The Middle phase (Hallstatt VII)	297
9) The Middle phase (Hallstatt VIII)	300
10) The Middle phase (Hallstatt IX)	303
11) The Middle phase (Hallstatt X)	306
12) The Middle phase (Hallstatt XI)	309
13) The Middle phase (Hallstatt XII)	312
14) The Middle phase (Hallstatt XIII)	315
15) The Middle phase (Hallstatt XIV)	318
16) The Middle phase (Hallstatt XV)	321
17) The Middle phase (Hallstatt XVI)	324
18) The Middle phase (Hallstatt XVII)	327
19) The Middle phase (Hallstatt XVIII)	330
20) The Middle phase (Hallstatt XIX)	333
21) The Middle phase (Hallstatt XX)	336
22) The Middle phase (Hallstatt XXI)	339
23) The Middle phase (Hallstatt XXII)	342
24) The Middle phase (Hallstatt XXIII)	345
25) The Middle phase (Hallstatt XXIV)	348
26) The Middle phase (Hallstatt XXV)	351
27) The Middle phase (Hallstatt XXVI)	354
28) The Middle phase (Hallstatt XXVII)	357
29) The Middle phase (Hallstatt XXVIII)	360
30) The Middle phase (Hallstatt XXIX)	363
31) The Middle phase (Hallstatt XXX)	366
32) The Middle phase (Hallstatt XXXI)	369
33) The Middle phase (Hallstatt XXXII)	372
34) The Middle phase (Hallstatt XXXIII)	375
35) The Middle phase (Hallstatt XXXIV)	378
36) The Middle phase (Hallstatt XXXV)	381
37) The Middle phase (Hallstatt XXXVI)	384
38) The Middle phase (Hallstatt XXXVII)	387
39) The Middle phase (Hallstatt XXXVIII)	390
40) The Middle phase (Hallstatt XXXIX)	393
41) The Middle phase (Hallstatt XL)	396
42) The Middle phase (Hallstatt XLI)	399
43) The Middle phase (Hallstatt XLII)	402
44) The Middle phase (Hallstatt XLIII)	405
45) The Middle phase (Hallstatt XLIV)	408
46) The Middle phase (Hallstatt XLV)	411
47) The Middle phase (Hallstatt XLVI)	414
48) The Middle phase (Hallstatt XLVII)	417
49) The Middle phase (Hallstatt XLVIII)	420
50) The Middle phase (Hallstatt XLIX)	423
51) The Middle phase (Hallstatt L)	426
52) The Middle phase (Hallstatt LI)	429
53) The Middle phase (Hallstatt LII)	432
54) The Middle phase (Hallstatt LIII)	435
55) The Middle phase (Hallstatt LIV)	438
56) The Middle phase (Hallstatt LV)	441
57) The Middle phase (Hallstatt LVI)	444
58) The Middle phase (Hallstatt LVII)	447
59) The Middle phase (Hallstatt LVIII)	450
60) The Middle phase (Hallstatt LIX)	453
61) The Middle phase (Hallstatt LX)	456
62) The Middle phase (Hallstatt LXI)	459
63) The Middle phase (Hallstatt LXII)	462
64) The Middle phase (Hallstatt LXIII)	465
65) The Middle phase (Hallstatt LXIV)	468
66) The Middle phase (Hallstatt LXV)	471
67) The Middle phase (Hallstatt LXVI)	474
68) The Middle phase (Hallstatt LXVII)	477
69) The Middle phase (Hallstatt LXVIII)	480
70) The Middle phase (Hallstatt LXIX)	483
71) The Middle phase (Hallstatt LXX)	486
72) The Middle phase (Hallstatt LXXI)	489
73) The Middle phase (Hallstatt LXXII)	492
74) The Middle phase (Hallstatt LXXIII)	495
75) The Middle phase (Hallstatt LXXIV)	498
76) The Middle phase (Hallstatt LXXV)	501
77) The Middle phase (Hallstatt LXXVI)	504
78) The Middle phase (Hallstatt LXXVII)	507
79) The Middle phase (Hallstatt LXXVIII)	510
80) The Middle phase (Hallstatt LXXIX)	513
81) The Middle phase (Hallstatt LXXX)	516
82) The Middle phase (Hallstatt LXXXI)	519
83) The Middle phase (Hallstatt LXXXII)	522
84) The Middle phase (Hallstatt LXXXIII)	525
85) The Middle phase (Hallstatt LXXXIV)	528
86) The Middle phase (Hallstatt LXXXV)	531
87) The Middle phase (Hallstatt LXXXVI)	534
88) The Middle phase (Hallstatt LXXXVII)	537
89) The Middle phase (Hallstatt LXXXVIII)	540
90) The Middle phase (Hallstatt LXXXIX)	543
91) The Middle phase (Hallstatt LXXXX)	546
92) The Middle phase (Hallstatt LXXXXI)	549
93) The Middle phase (Hallstatt LXXXXII)	552
94) The Middle phase (Hallstatt LXXXXIII)	555
95) The Middle phase (Hallstatt LXXXXIV)	558
96) The Middle phase (Hallstatt LXXXXV)	561
97) The Middle phase (Hallstatt LXXXXVI)	564
98) The Middle phase (Hallstatt LXXXXVII)	567
99) The Middle phase (Hallstatt LXXXXVIII)	570
100) The Middle phase (Hallstatt LXXXXIX)	573
Chapter III The later phase of the Linear Pottery culture	576
1) The later phase I	578
2) The later phase II	581
3) The later phase III	584
4) The later phase IV	587
5) The later phase V	590
6) The later phase VI	593
7) The later phase VII	596
8) The later phase VIII	599
9) The later phase IX	602
10) The later phase X	605
11) The later phase XI	608
12) The later phase XII	611
13) The later phase XIII	614
14) The later phase XIV	617
15) The later phase XV	620
16) The later phase XVI	623
17) The later phase XVII	626
18) The later phase XVIII	629
19) The later phase XIX	632
20) The later phase XX	635
21) The later phase XXI	638
22) The later phase XXII	641
23) The later phase XXIII	644
24) The later phase XXIV	647
25) The later phase XXV	650
26) The later phase XXVI	653
27) The later phase XXVII	656
28) The later phase XXVIII	659
29) The later phase XXIX	662
30) The later phase XXX	665
31) The later phase XXXI	668
32) The later phase XXXII	671
33) The later phase XXXIII	674
34) The later phase XXXIV	677
35) The later phase XXXV	680
36) The later phase XXXVI	683
37) The later phase XXXVII	686
38) The later phase XXXVIII	689
39) The later phase XXXIX	692
40) The later phase XL	695
41) The later phase XLI	698
42) The later phase XLII	701
43) The later phase XLIII	704
44) The later phase XLIV	707
45) The later phase XLV	710
46) The later phase XLVI	713
47) The later phase XLVII	716
48) The later phase XLVIII	719
49) The later phase XLIX	722
50) The later phase L	725
51) The later phase LI	728
52) The later phase LII	731
53) The later phase LIII	734
54) The later phase LIV	737
55) The later phase LV	740
56) The later phase LVI	743
57) The later phase LVII	746
58) The later phase LVIII	749
59) The later phase LIX	752
60) The later phase LX	755
61) The later phase LXI	758
62) The later phase LXII	761
63) The later phase LXIII	764
64) The later phase LXIV	767
65) The later phase LXV	770
66) The later phase LXVI	773
67) The later phase LXVII	776
68) The later phase LXVIII	779
69) The later phase LXIX	782
70) The later phase LXX	785
71) The later phase LXXI	788
72) The later phase LXXII	791
73) The later phase LXXIII	794
74) The later phase LXXIV	797
75) The later phase LXXV	800
76) The later phase LXXVI	803
77) The later phase LXXVII	806
78) The later phase LXXVIII	809
79) The later phase LXXIX	812
80) The later phase LXXX	815
81) The later phase LXXXI	818
82) The later phase LXXXII	821
83) The later phase LXXXIII	824
84) The later phase LXXXIV	827
85) The later phase LXXXV	830
86) The later phase LXXXVI	833
87) The later phase LXXXVII	836
88) The later phase LXXXVIII	839
89) The later phase LXXXIX	842
90) The later phase LXXXX	845
91) The later phase LXXXXI	848
92) The later phase LXXXXII	851
93) The later phase LXXXXIII	854
94) The later phase LXXXXIV	857
95) The later phase LXXXXV	860
96) The later phase LXXXXVI	863
97) The later phase LXXXXVII	866
98) The later phase LXXXXVIII	869
99) The later phase LXXXXIX	872
100) The later phase LXXXXX	875

## Contents

	273
Introduction	274
<u>Chapter I</u> The Early Phase of the Linear Pottery culture	278
1)The Great Hungarian Plain I & II	279
Contact with Körös	280
Pottery development	282
blade and stone industry	285
2)The Eastern Province I & II	286
3)The Central Province I	291
Pottery development	291
Houses	295
Blade and polished stone industry	296
4)The west-central province I	297
Pottery development	297
Houses	298
Blade and polished stone industry	299
Economy	300
5)The western province I	301
Summary	304
<u>Chapter II</u> The Middle phase of the Linear Pottery culture	307
1)The Nuclear Region III	309
A)The lower Tisza valley(Szakalhat-Lebő)	309
Contact with Vinča-Tordoş	311
B)The middle Tisza and lower Körös	325
C)The Alföld(central and north-east part)	329
2)The eastern province III & IV	333
3)The central province	339
Pottery development(notenkopf & Zeliezovce)	340
Houses and economy	343
4)Expansion north of the Carpathians	345
Poland	345
Ukraine and Moldavian SSRs,Rumania	347
5)The west-central province III & IV	355
6)The western province II & III	360
Summary	364
<u>Chapter III</u> The Later phase of the Linear Pottery culture	369
1)The nuclear region	370

A)The Tisza basin 370

B)The Central part of the Alföld 374

Introduction Herpaly and Csoszhalom

2)The eastern province V 377

3)The central province IV 379

4)The west-central province IV 381

5)The western province I VI 383

Summary 385

## Introduction

A study which involves tracing the development, expansion and inter-relationships of a culture is necessarily limited by the nature and documentation of the material. Thus, while this description will be based as far as possible on an analysis of all aspects of the material culture described in Parts I and II, the material of the Linear Pottery cultures is distinguished by its remarkable uniformity in time and space, so that the only criterion for dividing the cultures into phases and provinces or groups is the changing fashions in pottery design, and slightly differing techniques in the manufacture of the pottery fabric and forms.

As mentioned, in Part II, Chapter 1, and 2, it is possible to see differences between houses of the early and late phases of the culture in Holland, and between late and early storage methods in Bohemia, and there is a certain amount of difference in the houses of the various groups, but house- and settlement-types could only become an important criterion for classifying the cultures after many more large systematic excavations of the sites had been carried out.

The basic economy and stone implements also vary among the local groups, as described in Part I, Chapters 3 and 4, but at the moment, these features have only a secondary role in the classification of the cultures.

It is intended in this part, therefore, to base the description of the Linear Pottery cultures on the classification of the pottery itself, and to supplement the rather one-sided evidence provided by the pottery with that of other aspects of the material culture, such as economy, settlement patterns, etc. wherever this is possible.



My classification of the cultures will combine the systems described in Part II, chapter 4, especially those of Soudský, Quitta, Pavúk and Lichardus, and to a certain extent Tichý and E. Neustupný, with the additional material from East Hungary, which has not normally been considered within the framework of the Linear Pottery cultures.

Besides the purely chronological classification, the cultures are divided into regional groups, which are based on geographical rather than political areas, although it is often more convenient to refer to them by their modern political names. These groups, or provinces, include:

1) A nuclear region of the Great Hungarian Plain comprising the modern East Hungary and north-west Rumania. This large region is sub-divided into a) the central part of the Hungarian Plain (Alföld), b) a region in the north-east of the Plain which is transitional towards the Carpathian mountains, and c) the Tisza valley which borders the plain in the west. In the middle phase of the cultures, a new region is added to this province: that of the lower Tisza valley, and lower Kőrös and Maros valleys, including modern south-east Hungary, west Rumania, and north-east Yugoslavia, comprising part of the region known in the three countries as the Banat.

2) The Eastern region or province, which is a comparatively small area of the Slovak Carpathian mountains, including the modern North-east Hungary, East Slovakia, and the northern slopes of the mountains in south-east Poland. The settlements of this region are essentially upland sites, whereas the distribution of all the other Linear Pottery settlements is by rivers, on plains or at the foot of hills.

3) The Central province is the largest region consisting geographically of the middle Danube valley, and the basin of many of its tributaries which flow from the Carpathians and Alps, such as the Morava and Vah and Dyje. It is limited by the Alps and the infertile hilly region of the south-west of Czechoslovakia. Politically it includes south-west Slovakia, Hungary west of the Danube, north-east Austria (Nieder-Osterreich and Burgenland), and Moravia. In the middle phase of the culture, the province is extended to include the upper valleys and basins of the rivers which flow from the northern side of the Carpathians, such as the Oder and the Vistula and the Dniester and Prut, including the modern south-east Poland, West Ukraine SSR., the north Moldavian SSR., and north-east Rumania (Moldavia).

4) The west-central province includes the upper basins of the Elbe and Saale rivers, and part of the upper Danube, consisting of modern Bohemia, the southern part of East Germany (Saxony and Thuringia), and the south-eastern part of West Germany (Bavaria).

5) The western province was only settled after the initial settlement of the other regions and includes especially the Rhine valley: the western part of West Germany (Baden-Wurttemberg, Hesse, Rheinland etc.), the southern part of Holland (Limburg) and Belgium, and the north-east part of France (Alsace and Bas-Rhin).

Chronologically, the cultures have been divided basically into an early, middle and late phase, each of which, except for the late phase, has been subdivided. However, it is hoped to avoid too much unnecessary classification and subdivision (which is, after all, based almost wholly on the fashions of pottery decoration), and any static dogmatism concerning the chronological or

spatial divisions. These divisions are a means to the end of tracing the development and expansion of the cultures, and should not be regarded as an end in themselves.

## MAP CHAPTER I

III The Early Phase of the Linear Pottery Cultures

The general characteristics of the pottery of the early phase have already been described in Part II, Chapter 4. In this chapter local variations or local high proportions of certain types of decoration or forms will be mentioned. The basic fabric of the pottery is chaff-tempered, thick, and fired in highly-oxidising conditions producing a red/orange colour. The forms are very close to those of the Starčevo and Körös cultures, including pedestalled hemispherical or  $3/4$  spherical bowls, cylindrical-necked bottles with lugs on the body, and flat or disc-based hemispherical bowls, etc. The principal method of decoration was by incising in simple linear patterns formed by one or two, and later three parallel lines.

Each province will be discussed in a separate section, but, as far as possible, it is intended to correlate the phases. However, in E. Hungary, the initial settlement of the Linear Pottery culture occurs earlier than in the regions further west and north, so that Phase Ia in the central and west-central area is roughly contemporary with Phase Ib in East Hungary. The initial settlement in N.E. Hungary is slightly later than that in E. Hungary, but earlier than that in Moravia and W. Hungary, so that the main phase of early Linear Pottery settlement in N.E. Hungary, Ib, is contemporary with Ia in Moravia. There is likely to have been a similar time-lag between the settlement of the central and west-central regions, but for the sake of convenience, and because there is no evidence that the difference was very great, Phase Ia in the central province corresponds to Phase Ia in the west-central province. The western province has little or no pottery which corresponds



to the earliest pottery of the regions further east; the earliest period of Linear Pottery settlement in this area is therefore referred to as phase Ib.

Since the expansion of the Linear Pottery cultures represents the earliest agriculturalists in each region, there is very little evidence for contact or trade with the neighbouring neolithic cultures, except for the sporadic occurrence of mediterranean spondylus shells in graves. The amount of acculturation by indigenous mesolithic populations, especially in the western province, although discussed to a certain extent in Part I, chapter 3, is almost beyond the scope of this study, and will not be discussed in this part, except in reference to the early agricultural communities of the upper basins of the Vistula, Dniester, S. Bug and Prut rivers.

The Linear Pottery settlements of the Great Hungarian Plain, and those of north-west Yugoslavia/south-west Hungary, however, are distributed on the periphery of the regions dominated by settlements of the early neolithic cultures of south-east Europe, and contact with these, as shown by imports of pottery, will be discussed in the relative sections.

#### 1) The Great Hungarian Plain (Nuclear Province) I & II

The distribution of the earliest phase of the Linear Pottery settlements on the great plain is centred in the central part of the plain, although there are sporadic sites along the middle valley of the Tisza, such as Jaszdozsa, Kensavgyár and Tiszaiger, all near Szolnok. Pottery of this phase also appears as far south as the Körös river, at the site of Szappanos at Szarvas (Banner, 1931b, 66-67); near to this southernmost Linear Pottery settlement there is a settlement with the rusticated and fine ware of the contemporary Körös culture;

these include the sites of Szarvas (Halasztelek), (Halez), and (Kovacs halom) (Banner, 1931, 66-67; 1932, 46-47).

However, there seems to have been very little contact between the earliest agriculturalists of the Hungarian Plain represented by the early phase of the Linear Pottery culture, and the early agricultural communities south of the Körös river in south-East Hungary, west Rumania and north-east Yugoslavia, in the region where the transitional Starčevo-Körös and the Körös culture predominated at this time. Sporadic examples of sherds of the early Linear Pottery culture do occur on one or two of the Körös culture sites, but they are hardly likely to represent any active contact; examples of these include:

a) Bariciret, nr. Hódmezővásárhely, S.E. Hungary. Sherd of thick material decorated by incised wavy lines. The sherd was found on the surface near a Körös culture settlement. (Korek, 1960, 44; Banner, 1940, 21).

b) Gyalaret, nr. Szeged, S.E. Yugoslavia. From the upper level of the settlement, there were one or two thick sherds with wide incised lines. Unpublished; excavated by Trogmayer; material in Szeged Museum.

c) Maroslele (Pana), nr. Szeged. In the upper layer of the settlement possible elements of the Linear Pottery culture occur in the form of sherds with incised decoration. (Trogmayer, 1964, 67-88; and discussion with Trogmayer at Szeged Museum, April, 1965).

d) Turdaş, nr Alba Iulia, W.C. Rumania, on the R. Mureş. This settlement must originally have been stratified in a similar way to La Tártaria etc. (Vlassa, 1963, 485-494), but the material has been documented together without reference to any strata (Roska, 1941); as will be mentioned in a later chapter, many of the large Transilvanian sites were occupied from a

period contemporary with Vinča B1 until the eneolithic Petrești culture. There is also evidence for settlement of an earlier period with material of the Cris culture, and several of the sherds found at Turdaș are obviously from the early phase of the Linear Pottery culture of the Great Hungarian Plain, and would be contemporary with this period of settlement.

It is understandable that there would be comparatively weak contact between the early agricultural communities of the Hungarian Plain and those of south-east Europe in the earliest phase of the former's expansion and development; in the same way there is little evidence that the agricultural colonists, represented by the Starčevo culture, had any active contacts with the contemporary settlements of Macedonia and Thessaly to the south.

In the preceding chapters, however, it has been constantly shown that all the initial stimulus in the development of the Linear Pottery cultures came from the south-east; this is seen (quite naturally) most strongly in the Alföld (Great Hungarian Plain) where the culture, representing agriculturalists from the south-east who responded or adapted to increasingly different physical conditions, first emerged as an independent group of associated features.

The associated features, as seen in this area in the early phase are severely limited due to very scanty excavation, and very little systematic, scientific documentation of the material. The sites of the Linear Pottery culture in this area are situated especially by rivers, and consist of either simple "culture layers" or pits interpreted variously as pit-dwellings, building pits, and storage pits. No houses have yet been excavated from the Linear Pottery sites of the Alföld of any period, but it is clear that with larger excavations houses would be uncovered, since surface hearths have occurred, as

at the site of Tócópart (Bleuerföld), nr. Debrecen (Korek, 1960, 35; Sőregi, 1933, 32-33).

Since no evidence is available for the economy of the settlements of the earliest phase of the Linear Pottery of East Hungary, the main indication for the emergence of a new cultural group in this region is in the appearance of incised pottery. Incised pottery occurs on all sites of the culture, and partly on a basis of the typological development of the decorative styles from simple to more sophisticated patterns, and of an improvement in the manufacture of the pottery fabric, it is possible to divide the early phase of the Linear Pottery culture into three sub-phases, although it is difficult to support this by less subjective evidence when no horizontal or vertical stratigraphy exists, and when there is not enough material for a statistical analysis of the pottery on the lines of that done at Bylany; at some sites, where there is a large amount of material, the documentation is not detailed. However, the present subdivision is worked out especially from the material of the recently excavated sites of Tiszavasvari (Paptelekhát) and (Keresztfal) west of Nyíregyháza, which are unpublished, but were made available by the excavator Nandor Kalicz (Kalicz, 1958, 83).

75 The decoration of the earliest phase (Ia) consists of very simple patterns  
 81: executed by wide lines (3.5-6 mm. wide) with a U-cross-section. The patterns  
 3-4  
 83 are generally made by a single line, curved or rectilinear, without any lines  
 24 bordering the rim. The incised pottery of this phase is associated with the  
 14- earliest type of painted pottery as seen in the north-east at Domica, and in the  
 19 Hungarian Plain at Tiszavasvari (Paptelekhát) and Tiszalok (Berettskydűlő) and  
 20  
 24:1 Ciurmești, N.W. Rumania (Paunescu, 1963, Pl.1:11,12); this early painted ware is  
 54:23-4



distinguished by the broad black lines painted on a red burnished slip on fine ware, in an identical style to that on sherds of the Starčevo and Starčevo-Kőrös sites. The earliest incised ware occurs on only four sites on the Alföld:

Ciumești, nr. Baia Mare

Tiszaok (Kisfás-Berettskydűlő), nr. Nyíregyháza

Tiszavasvari (Keresztfal) nr. Nyíregyháza

Tiszavasvari (Páptelekhát) nr. Nyíregyháza

And on one site of the transitional region:

Tiszadob (Okenez), north of Nyíregyháza.

A development in the fabric and decoration of the pottery is apparent in the next phase, Ib, and, it seems, an expansion of the settlement area, although there are only the three sites mentioned in the middle valley of the Tisza.

The incised pottery of Phase Ib is more often fired in reducing conditions, producing a grey/black colour, although it is still tempered predominantly with chaff. The incised patterns are more often made by two broad parallel lines, with the rim and base defined by further lines; wavy lines occur, although not as commonly as in the contemporary settlements of the eastern province.

The incised pottery of this sub-phase is associated on a number of sites with painted pottery in a fabric which is identical to that of the painted pottery of the preceding phase (Ia), being very fine, thin and hard, and with a deep red burnished slip. The black-painted patterns, however, although obviously having their prototypes in the patterns of the Starčevo and Starčevo-Kőrös ware, already show signs of local development, consisting especially of rectilinear patterns formed by bands of parallel thin lines bordered by thick stripes. This type of pottery occurs on 14 of the sites of this phase in the

Alföld, and on one site of the transitional region of the north-east part of the Alföld.

Also associated with the incised ware of this and the following phase

23:1 is the chaff-tempered ware with combined incised and painted decoration, on which  
 24:2 the black paint elaborates and emphasises the incised lines. This decorative  
 26-27 style is seen also in the eastern province, although the black-on-red painted  
 29:1-2 style, known as the Esztar style, hardly occurs at all. Three of the sites on  
 30- the Alföld have produced pottery decorated with combined incised and painted  
 33 designs.

The end of the early phase of the Linear Pottery culture of the Alföldi  
 (II) is marked, as in all the provinces of the Linear Pottery culture, by a  
 great increase in settlements and a development in the decorative styles of  
 the pottery. Settlements from this period are found all along the middle  
 valley of the Tisza, from Szentes northwards. Apart from the increase in  
 settlement there is very little difference in the material culture, except for  
 82 a predominance of incised patterns on the pottery made by bands of three broad  
 87-88 parallel lines, or wavy lines, so that the phase could as easily be called  
 91-92 "Ic". The fabric of the pottery is tempered less predominantly by organic  
 93-94 material, and tends to contain more mineralogical inclusions, with a finer  
 smoother surface, and blacker colour. In this period there also appear among  
 88:2 the pot-forms bi-conical bowls reminiscent of the contemporary early Vinča  
 culture.

The painted ware and combined painted and incised ware is also associated  
 with the incised pottery of this period, but it is restricted to the sites of  
 the Alföldi itself, and never occurs on the sites of the middle Tisza valley.

The pottery of this period is closely connected to the connected to the contemporary pottery of the eastern province, and the two seem to have had a roughly parallel development, except that, as mentioned above, the "Esztar" type of painted ware is limited to the Alföld. The stratified and systematically excavated cave settlements of south-east Slovakia such as Domica (Lichardus, 1964, 841-881) have provided the basis of the classification of East Hungarian material, although it must be remembered that the development may not have been exactly parallel, since the settlements of north east Hungary/south-east Slovakia were rather more isolated in the Carpathian foothills. It is possible to see, however, that there is a development from simple single-lined patterns to patterns made of two and then three lines increasingly closer together, with a corresponding improvement in the fabric of the pottery.

Close relations between the Linear Pottery settlements of the Alföld and those of N.E. Hungary are shown by the very common employment of obsidian for blade tools, especially blades 3-5 cm. long, with retouching down one edge. The obsidian comes from the Bükk mountains, of N.E. Hungary, centred on Miskolc, and was presumably imported directly or indirectly from there to the Alföld. Other stone implements typical of the early Linear Pottery culture of this region are flint blades 4-7 cm. long with retouching down one or both edges, and with the bulb of percussion retained; sickle gloss was comparatively rare. Polished stone tools include small flat trapezoid axe/adzes, 5-10 cm. long.

No microlithic elements are discernable in the blade industry of these settlements except that discussed in Part I, Chapter 3, from Ciurmești, nr. Baia Mare, N.W. Rumania, where a large percentage of the flint and obsidian blades

were smaller than 3.5 cm. The sites among the dunes of Ciumesti have also produced pottery of all the early phases of the Linear Pottery culture of the Alföldi, but not necessarily in association with the microliths. Comsa and Paunescu believe that the microliths are associated with the neolithic pottery and polished stone axe/adzes, and that they represent a possible local mixing of mesolithic and neolithic populations. (Comsa, 1963, 477-483; Paunescu, 1963, 467-475).

Evidence of burials of this period of the Linear Pottery culture on the Alföldi come from:

- a) Nagykálló, co. Szabolcs. Grave in settlement. (Korek, 1957, 14-24; Lichardus, 1964, 862).
- b) Egyek, nr. Polgár. 14 burials, but only two from the early phase. With a settlement. (Korek, 1957, 14-24).
- c) Tiszavasvari (Páptelekhát), nr. Nyíregyháza. 14 burials in the Linear Pottery settlement. (Kalicz, 1958, 83; Korek, 1957, 14).

and in the transitional region of north-east Alföldi:

- d) Vadna, co. Borsod. Graves in the settlement (Korek, 1957, 14-24).

All the burials mentioned above were crouched inhumations with the body lying on its side, in most cases without any grave-goods, although there was occasionally a pot by the body as at Vadna.

## 2) The Eastern Province (N.E. Hungary/S.E. Slovakia) I & II

The sites of the Linear Pottery culture of this region are distributed as much in the caves of the limestone foothills of the Carpathians as they are on open settlements of the valleys. Although many of the caves later settled during the neolithic period were previously settled during the late Pleistocene period, there



is very little evidence for these foothills being populated in the intervening period (Barta, 1960, 1-13). It seems likely, therefore, that the appearance of the Linear Pottery culture in this relatively infertile region was not the result of acculturation by a local mesolithic population, but of direct colonisation by the agriculturalists from the Hungarian Plain. From the evidence of the pottery styles, this colonisation must have taken place soon after the initial development of the Linear Pottery culture on the Alföldi.

From the stratigraphical evidence of the recently excavated east Slovak caves of Domica, Ardovo and Barca, the early phase of the Linear Pottery culture in East Slovakia has been divided into three sub-phases, probably roughly corresponding to those of the Alföldi, although starting a little later. There seems little change from one phase to the next in any aspects of the material culture except the pottery decoration, forms and fabric, although it would be difficult to distinguish it in anything but the pottery, since there is no evidence for surface structures in the settlements, nor has any of the animal bone material from the caves yet been analysed. The most detailed and systematic excavations have been carried out in the caves of Slovakia, but apart from the stratigraphical aspect, there are as yet no detailed reports of other aspects of these settlements. (Lichardus, 1964, 841-881; Barta, 1960, 14-15).

The earliest phase of the Linear Pottery culture in this region is represented by the lowest neolithic layer at Domica with painted pottery of a type identical to that from the sites of the Starčevo and Starčevo-Körös cultures; this is a thin fine ware with a red burnished slip, and painted with thick black lines in curvilinear and rectilinear patterns. (Lichardus, 1964, 860-862). This earliest pottery, comparable to that from Tiszalók (Berettskydülő) and Ciumești (Berya) in the Alföldi, is limited to the south-east part of Slovakia,

and north-east Hungary, especially in the limestone caves of the so-called  
 7:1-2 "Slovak Karst", such as Aggtelek, which is a continuation into Hungary of the  
 18 Domica cave, Ardo in Slovakia near Domica, and Kolyúk, nr. Miskolc in  
 19 north-east Hungary (Korek, 1957, 14-24; Parducz, 1949, 111-112).

On these sites, the early painted pottery is associated with incised  
 ware with very simple decoration made by broad single lines as at Tiszadób  
 (Okenez), Tiszavasvari (Paptelekhát) etc.

However, the main settlement of the Linear Pottery in this region took  
 place after the initial phase of development (Ib) in open sites and caves, but  
 still limited to south-east Slovakia and north-east Hungary. The sites of  
 II:3 this phase are distinguished by incised ware decorated with one or two parallel  
 broad lines in curvilinear and rectilinear patterns, often incorporating wavy  
 lines. This ware was first classified as the East Slovak Linear Pottery on a  
 3- basis of the systematic excavations at the open site of Barca III, nr. Košice  
 00 (Hajek, 1957, 3-8). The excavations at Domica and Ardo have shown that it  
 does not represent the earliest agriculturalists in this region, but it  
 certainly represents the earliest important phase of settlement in S.E. Slovakia.  
 (Lichardus, 1964, 848-852).

On one of the sites of this phase, the incised pottery is associated with  
 red-slipped pottery with black-painted rectilinear patterns of the Esztár type:  
Bogács, west of Miskolc, (Korek, 1960, 41).

On three other sites, the incised ware is associated with pottery with  
 +2-4 combined incised and black-painted decoration: at Aggtelek, and Domica, and  
 7:2 possibly the chaff-tempered sherds with incised decoration and a red slip from

100 Budőspester cave should be grouped with these (Material unpublished in Miskolc  
 II:1 Museum). This type of chaff-tempered pottery with incised lines elaborated  
 9:1-2 by black paint is especially characteristic of the sites of the transitional  
 0-31 region of the north-east part of the Alföldi, in the valleys of the upper  
 32:1 Tisza and Bodrog rivers, where it occurs on 3 sites, and the two Tiszavasvári  
 sites peripheral to this region.

6:3 There are one or two sherds from Domica which combine black painted  
 decoration with fine channelled or fluted decoration similar to that seen on  
 the pottery of the early Vinča-Tordoš culture (Milojčić, 1949a, 72-73). This  
 need not indicate a correlation between the Linear Pottery of the eastern  
 province in this phase and the early Vinča-Tordoš culture, since fine fluted  
 decoration occurs on the fine plain ware of the Starčevo culture, and predominates  
 on the pottery of the Karanovo II culture of Bulgaria (Garašanin D., 1954, 76-77;  
 Georgiev, 1961, 63).

The incised pottery follows a parallel development to that in the Alföldi  
 (if we regard the S.E. Slovak stratigraphy as applicable to the East Hungarian  
 material), and the last part of the early phase of the Linear Pottery culture  
 in this region (II) is distinguished by an improvement in the fabric of the  
 pottery, a development of the pot forms, sophistication in the decorative  
 styles, and an expansion of the settlement area, although the latter is not as  
 spectacular as in the nuclear region.

The pottery has been regarded as consisting of two types which both occur  
 on the same sites; the first is the Linear Pottery of the Ardovo-Certova Diera  
 type, and the second represents the earliest phase of the Bükk pottery (A).  
 As mentioned before, however, it is very difficult to distinguish between the

two types, except that the lines of the Linear Pottery have a U-cross-section, and those of the Bükki culture have more of a V-cross-section (Lichardus in discussion at Nitra, May, 1964). For the purposes of this study, however, it will be sufficiently clear if all the pottery of these sites is treated as Linear Pottery, and those sherds regarded as the early phase of the Bükki culture as representing the beginning of local variation in this region. The pottery of Ardovo and Čertova Diera, and other cave sites of S.E. Slovakia/N.E. Hungary, consists of finer ware with less chaff-tempering, more mineralogical inclusions and a finer smoother surface; the forms include bi-conical bowls, bowls with wavy rims, hemispherical and  $\frac{3}{4}$  spherical bowls on flat or disc bases etc. Decoration is by incised lines, especially bands of three parallel lines, in rectilinear or curvilinear patterns (Lichardus, 1964, 852-858).

Obsidian is the most important medium for blade implements; the obsidian blades are almost identical to those of the Alföldi, being 3-5 cm. long, with shallow retouching down one or both edges. There are also a few flint blade implements which occur, and which are rather longer than those of obsidian, and occasionally show traces of "sickle-gloss". Polished stone tools include the small flat trapezoid axe/adzes 5-10 cm. long, and rarer examples of the narrower implements with a slightly plano-convex cross-section.

Burials have been excavated from the early settlements of the Linear Pottery cultures of this region, for instance in the cave of Kolyúk (Parducz, 1949, 111-112; Korek, 1957, 14-24) and at Megyászó nr. Szerencs (Korek, 1957, 14-24). In both cases the burials were crouched inhumations deposited among the domestic rubbish of the settlements, without any grave-goods.



### 3) The Central Province (W. Hungary, Moravia, S.W. Slovakia) I

The settlements of the earliest phase of the Linear Pottery culture west and north of the Danube (Ia) are restricted to the northern part of West Hungary, especially around the northern shores of Lake Balaton, such as the sites of Bicske and Keszthely, the lower valley of the Váh in south-west Slovakia, and the lower valleys of the Morava and Dyje rivers in Moravia, although there are sporadic occurrences of settlements of this phase further north as at Zopy, Veselíčko and Mohelnice, in Central and north-west Moravia.

As in East Hungary, the excavation of sites of this region has been on a relatively small scale, although there are exceptions, such as Mohelnice and Bicske.

The basis of the sub-division into two phases Ia and Ib is the typological development of the decoration, forms and fabric of the pottery. The pottery of the earliest phase is very similar to that of the early phases Ia and Ib in the nuclear and eastern provinces, being thick soft, chaff-tempered orange/buff fabric, made into cylindrical or flaring necked bottles with lugs on the body pedestalled bowls, straight sided truncated-cone bowls hemispherical and  $\frac{3}{4}$  spherical bowls with flat or disc-bases etc. The decoration, as in the nuclear and eastern provinces, consists of one or two parallel incised lines, 3 - 6 mm. broad, with a U-cross-profile, in predominantly curvilinear patterns, especially that involving two opposed spirals often separated by a perpendicular line; there are also simple rectilinear patterns, but the meander is very rare. The rims and bases of the pots are never defined by specific lines (Tichy, 1962, 272; 1960, 427-428).

The incised pottery of the early phase of the Linear Pottery culture of

the central province is never associated with the fine black-painted ware, or with chaff-tempered ware with combined painted and incised decoration.

III:3 The coarse kitchen ware is very little different from the point of view of fabric and forms, except that the pottery is rather thicker and softer; the decoration, however, is by a method of rustication by finger-and nail-impressions, which is very similar to that of the coarse ware of the Linear Pottery culture of the Eastern and Nuclear Province and of the " " Starčevo-Körös cultures of south-east Hungary and north Yugoslavia.

VI:1 As in East, and North-east Hungary, the pottery of the last part of the early phase of the Linear Pottery culture of the Central Province, (Ib), is distinguished from that of the first part by a predominance of patterns made of three parallel lines relatively close together; by far the most important pattern is the S-pattern and the opposed spirals, which, when made by three parallel lines, form the basis of the so-called "Áckovy pattern" (Soudský, 1954, 89-95). Meanders of one, two or three parallel lines do occur, especially in the Hungarian sites such as Zalavár, but rectilinear patterns are comparatively infrequent.

There is not the great improvement in the manufacture of the pottery fabric that is seen in the contemporary settlements of the eastern and nuclear regions of the Linear Pottery culture (Phase II); the pottery remains predominantly chaff-tempered, with little or no deliberate mineralogical inclusions; it is still thick, soft, and fired in oxidising conditions giving it an orange/buff colour. There is also little development in the pot forms, except that the sharply-angled biconical bowls, with small button lugs at the angle, which appear even in the earliest phase (Ia)

become much more frequent in the settlements of this phase (Ib); the angle tends to become rounded; rounded bases of pots also appear in this phase; however, all the basic forms which occur in phase Ia continue.

A great expansion of the settlement area is evident in the later stage of the early phase of the Linear Pottery culture in the central province; many more sites occur in the regions which were already settled in the earliest phase (Ia), that is the middle valley of the Danube, and settlements are distributed further up tributaries of the Danube, including the whole length of such rivers as the Dyje and Morava, occurring already in the important gap through the Carpathians at Opava, and even at Bienczyce and Zofipole on the Vistula which flows north from the Carpathians (Hachulska-  
ledwos, 1963, 75-103; Kulczycka, 1961).

In the other direction, the settlement area was extended southwards to include the region of west Hungary south of Lake Balaton, as at Kiskánya, Magocs and Medina etc.; the settlements also occur as far south as the region north of the Sava river, centred on Vinkovci in east Croatia, in north Yugoslavia.

The east Croatian sites include Malo Korenovo, Budinscina, and Klokočevik, all between the right bank of the Danube and the left bank of the Sava (Dimitrijević, 1961, 6-17). East of the settlements, on the right and especially left banks of the Danube, there was intensive settlement by the agriculturalists who were dominated by the conservative traditions of south-east Europe, and represented by the final stages of the Starčevo-Körös culture on such tell settlements as Bapska and Sarvas (Schmidt, 1945 121-135), and by the earliest phases of the Vinča culture (Garasanin M, 1951, 79). It

is unlikely that the settlements with this early incised pottery represent a primary expansion of agriculturalists from the Starčevo-Körös settlements of east Croatia and Vojvodina.

The incised decoration of the pottery from Malo Korenovo, and the other sites, is not in the initial stages of its development, and has definite analogies with the pottery of the later part of the early phase of the Linear Pottery culture in the Lake Balaton district, including curvilinear and rectilinear patterns made by one, two or three broad parallel lines; the pot forms include several which are very reminiscent of the early part of the Vinča-Tordoš culture, such as bi-conical bowls on high flaring pedestals; however elements typical of the decoration of these bowls on the Vinča sites, such as fine fluting, is quite absent from the Linear Pottery sites.

Dimitrijević believes the Linear Pottery of Croatia is contemporary with the Vinča-Tordoš culture which predominated in Serbia and Vojvodina east of the Danube, but which had very little influence and is seen in its true form very rarely on the sites of Croatia. It is certainly likely that the Linear Pottery settlements of Croatia were in existence during the initial phase of the expansion of the Vinča-Tordoš culture and the disappearance of the Starčevo culture as a separate entity (Starčevo IV/VinčaA); and it is probable that they continued from some time contemporary with the settlements of the Vinča-Tordoš culture (Vinča Bi). It will be discussed in Part IV what possible effect the presence of an innovating culture with incised pottery in this region can have had in the formation of the Butmir culture at this time in the hills of Bosnia, south of Croatia.

The Linear Pottery of this region is regarded as Phase I of the Sopot-



Bapsko-Lengyel culture; phase II of the culture is distinguished from the early phase by being swamped by features from the later Vinča-Tordoš culture (B2) and the earlier part of the Vinča-Pločnik culture (C), such as "winkelband" decoration in spiral and meander patterns, deeper fluting, and wider bowls on higher flaring pedestals (Dimitrijević, 1961, 18-22). Any Linear Pottery elements in the economy or settlement pattern have not been documented, and any elements in the incised pottery were absorbed by the fashions and more sophisticated features from the south-east.

To return to what could be regarded as more the centre of stimulus for the settlement area of the Linear Pottery culture, other aspects of the material culture besides the pottery of the early phase in this region should be discussed.

The evidence for the majority of settlements comes from long building pits. Two sites from this phase, however, have produced evidence for surface structures which, as discussed in Part II, Chapter 1, should be interpreted as houses. The sites are Uničov nr. Olomouc in central Moravia and Mohelnice in north-west Moravia. The house from Uničov is only fragmentary, but shows a simple plan without bedding trenches or other elaborations (Tichý, 1962, 292; Nekvasil, 1953, 726-727). There are at least 12 houses from Mohelnice, but it is not yet possible to distinguish those of this early phase of the settlement from those of the later phases. The majority of the houses were of a simple plan with five rows of post-holes; 4 of them, however, had a feature almost unique to the houses of Moravia: that is a bedding trench outside and parallel to each of the long walls, approximately 2 m. long. (Tichý, 1962, 250-254).

The sites of the Linear Pottery culture in this region, even in the

early phase, show a much greater frequency of blade implements, especially flint, than the contemporary sites of the nuclear and eastern regions. The evidence  
 56-58 comes from a large number of sites including Zalavár, Bicske and Keszthely in  
 60-61 W. Hungary, and Zopy, Mohelnice, Velatice, Nová Vés and Opava in Moravia. The evidence has been described in detail in Part I, Chapter 3; the blades are 3 - 7 cm. long, retouched on one or both edges, often on both surfaces; "sickle-gloss" is a comparatively frequent feature, and occurs in a diagonal area across one corner, (often on both surfaces) which is almost invariably on the opposite end to that with the retained bulb of percussion; scratches often occur diagonally across the glossy area. The blades are almost identical in shape, size, retouching and signs of use throughout the central province of the Linear Pottery culture; there is almost no evidence for microlithic elements in the flint blade industry, except for one or two trapezes from Mohelnice, and a triangle from Opava. The only interesting feature in this connection is the occurrence at Mohelnice of long narrow borers with a square cross-section, whose closest analogies are in the Late Palaeolithic flint industry of South Moravia. However, there is no real positive evidence for contact with or influence from any preceding or contemporary hunting/fishing population with a microlithic blade industry. In fact the mesolithic and earliest neolithic cultures of central Europe seem to have had a distribution which was quite exclusive of each other.

Polished stone implements include the flat trapezoid axe/adzes with a rectangular cross-profile, and the long rectangular axe/adzes with a plano-convex cross-profile; in this early phase, however, these latter are comparatively flat, since the true "shoelast" adze was not evolved until

the succeeding phases of the culture. (Venc1, 1960, 1-43).

No analysis of animal bone material or plant remains is yet available from the sites of this early phase of the Linear Pottery culture in the central province.

Burials, which are all crouched inhumations, have occurred on a number of settlements, occasionally accompanied by pots, or spondylus beads and necklaces, but without any specific cemetery area in the settlement (Tichý, 1962, 260-262; Steklá, 1956, 706-707; Skutil, 1941, 21-37).

#### 4) The West-central Province (Bohemia, Saxony, Thuringia, Bavaria)I

The pottery of the early phase of the Linear Pottery culture of the west-central province has been divided into Phase Ia and Ib on a basis of the same criterion which divides the early Linear Pottery of the central province. The earliest pottery (Phase Ia) is limited to sporadic sites in Bohemia and the southern part of East Germany (Saxony and Thuringia), such as Nový Bydžov in E. Bohemia, Chodoun in W. Bohemia, Draschwitz and Dresden (Nickern) in Saxony, and Eitzum in Thuringia. The pottery of the earliest phase is very similar to that from Moravia, such as that from Žopy, and Boskovštejn; the fabric is thick, chaff-tempered, soft, and an orange/buff colour; the forms include cylindrical-and flaring-necked bottles with lugs on the body, straight sided bowls, hemispherical and  $\frac{3}{4}$  spherical bowls with flat or disc bases or short flaring pedestals and sharply angled bi-conical bowls. The decoration is by incised patterns of one or two parallel lines, 3 - 6 mm. broad with a U-cross profile, especially in the form of opposed simple spirals divided by a perpendicular line, or by a series of horizontal or perpendicular short lines.

The main period of initial settlement of the early agriculturalists in this region is during the Phase Ib of the Linear Pottery cultures. The pottery of this phase, as in the central province, shows very little change or development in the fabric and forms, except for an increase in the bi-conical bowls which have a somewhat rounded profile in this phase. The decoration is predominantly by three broad parallel incised lines in S-patterns, and opposed simple spirals, the style known as the "Ačkovy" style. This occurs on a large number of sites in Bohemia, the south part of East Germany, and on one or two sites of the upper Danube in Bavaria; the latter area should, perhaps, be connected more logically with the settlements of north-east Austria, but the later development of patterns in Bavaria is paralleled much more by the development in Thuringia and West Germany in the persistence of the filled-in band idea in the decoration rather than the acceptance of the "notenkopf" style of decoration. Thus it is probable that the early expansion of the Linear Pottery culture to this area was from the settlements in the Plzeň district, or Thuringia, although this is very difficult to prove, since the pottery of the early phase of the culture in N.E. Austria, is almost identical to the contemporary pottery in the west-central province.

The excavations in Bohemia and E. Germany have tended to be on a larger scale, or have been carried out rather more systematically, or perhaps it is because more of the original land surface in this region has been preserved that there is a considerable evidence for surface houses from the Linear Pottery settlements of the west-central region. The most important evidence comes from the large excavations at Bylany, described in more detail in Part II,



Chapters 1 and 2. However, the settlement in this early period is represented only by pits so far, in the site known as "F/G. The pits are exactly the same shape and form as those which in the main phases of the settlement are interpreted as pits from which material was obtained for building the walls of the long surface houses, and which were used secondarily as hearth places, oven-places and rubbish pits; there is no reason to suggest that the pits of the earliest phase of the settlement do not represent the same feature and that the dwelling places were in long rectangular surface houses which have yet to be excavated.

The houses at Bylany which belong to the early part of the middle phase of the culture (II pre-optimal) consist of the usual five rows of post-holes, but often have a bedding trench at the northern end, and a conglomeration of post-holes, probably representing a second floor for grain storage, at the southern end. (Soudský, 1962, 190-200).

There is evidence for houses of the early phase of the Linear Pottery culture in this region from the recently excavated site of Dresden (Nickern), in Saxony, consisting of five rows of post-holes, and similar elaborative features as seen at Bylany (Baumann, 1960, 95-138). All the other evidence for houses in the settlements of this region, however, is associated with pottery of the middle and later phases of the Linear Pottery culture.

The flint blade industry associated with pottery of the early phase of the Linear Pottery culture in this region shows again an increase in the importance of this feature of the material culture, although the chief working tools are still obviously the polished stone axe/adzes. The spectacular increase in the occurrence of sickle-gloss as seen at Dorna etc., is associated with middle phase of the culture. The main evidence for the

industry of this early phase comes from Bylany and Močovice in east Bohemia, (material unpublished in the research centre of the Institute of Archaeology at Bylany). The industry shows great similarities with that seen in the settlements of Moravia and Hungary, such as Mohelnice and Žopy; "sickle-gloss" occurs predominantly on the blades which are shorter than 3.5 cm. The longer blades 4 - 6 cm. long occur rather more frequently in this region; they are sometimes retouched down one edge, and occasionally show traces of diagonal scratches, or an area of sickle gloss across one corner. On these blades, which become the main blades to have "sickle-gloss" in the middle phase of the culture, the bulb of percussion is consistently retained, probably to ease hafting or handling.

The polished stone industry is also identical to that of the central province, flat trapezoid axe/adzes and narrower, more rectangular low plano-convex axe/adzes occurring on almost every site.

Evidence for the economy of the settlements of the early phase of the culture comes from a recent analysis of the animal bone material of the sites in the south part of East Germany (Müller, 1964), and described in Part I, Chapter 4. The analysis shows that the bones of domestic animals make up 96% of the total, thus proving the predominantly agricultural nature of the early Linear Pottery settlements in this region. Of these domestic animals, cattle form 60% of the total, pigs 11%, and sheep/goats 28%. In the evidence from the middle phase of the culture cattle appear as the dominant domestic animals in all regions, and pigs as the secondary animals, whereas as sheep/goats are quite unimportant. E. Germany is the only region which has produced such a high proportion of domestic sheep/goats, but it is also the only region which has produced evidence from the earliest phase of the Linear

Pottery culture. Therefore, until there is evidence from the sites of this phase from other regions, it must remain an open question whether the high percentage of sheep/goats is a feature of the early phase of the Linear Pottery culture generally, or only in E. Germany. It is interesting to note, however, that the high proportion of sheep continues and increases in the middle phase of the culture in this region, when it is still quite unusual.

Burials occur on a number of sites, but, as in the central province, there is usually no specific place in the settlements for burials; the crouched inhumations occur among the houses, or even in old building pits. Grave-goods often consist of Mediterranean spondylus shells, made into beads and necklaces, and sometimes pots which have the same shape as the domestic pots. (Steklá, 1956, 702-706; Kahlke, 1954). There are occasional groups of burials not associated with settlements, as at Bischleben and Sonderhausen, both in Thuringia (Kahlke, 1955, 52-62; 1956, 266-269).

#### 5) The Western Province I

The pottery of the earliest phase of the Linear Pottery culture (Ia) is almost totally absent from the sites of the Rhine valley. There are only a few possible sherds from the settlements of Goddelau, Schwalheim and Villingen, all in the region of West Germany known as Hesse which borders Thuringia in the east. (Meier-Arendt, 1963, 23-25).

Settlement by the earliest agriculturalists in this western region, where conditions were unfavourable for the formation of chernozem soils, and brownearth soils existed on the loess deposits, is first represented by the later part of the early phase of the Linear Pottery culture (Phase Ib). As in all the provinces of the culture, the settlements are concentrated on the loess deposits,

especially in the valleys and foothills of the Sauerland hills of Hesse, which form an extension of the Thuringian and Ore mountains, and the last outpost of the Carpathian massif. The Rhine valley itself forms an important centre of settlement, but more particularly in the middle phase of the culture, when the left bank of the river was also settled by the early agriculturalists. In this early phase, however, there are sporadic settlements of the Linear Pottery culture on the west side of the Rhine, even as far south as Dutch Limburg, such as the earliest phase of the settlement at Geleen (Waterbolk, 1959, 148-152).

The pottery of Phase Ib of the Linear Pottery culture in the western province is very similar to the pottery with the "Ačkovy" style of decoration, that is S-patterns and spirals made by three broad parallel lines. The pot forms in this area show less sophisticated elements, such as a lack of pedestals and disc bases, and a tendency towards rounded flat bases, and a rounder, more globular profile to the body. These features are likely to be the result of greater isolation from the centre of stimulus and increasing provincialism, as well as a probable time-lag between the Phase Ib pottery of the central and west-central provinces, and the Phase Ib pottery of the western province. This is also clear from the decoration which is rather less well executed than in the more central regions of the culture: the incised lines are not all of equal length or joined at the end, as may be seen in the pottery from the most distant site of Geleen.

Many of the sites of the western province of the Linear Pottery culture have produced evidence for long surface houses, but only three of these are from this early phase of settlement. The house at Duderstadt, nr. Hannover, was of the usual rectangular shape represented by five rows of post-holes, but the outer



rows were double post-holes (Stieren, 1951, 73-74). Butzbach (Griedel) has possible evidence for a long house from this phase represented by a series of parallel long building pits 8 - 10 m. apart; it is presumed that the post-holes have not been preserved in this area. The houses from Geleen, representing the early type of Linear Pottery house in Holland and West Germany, have been discussed in detail in Part II, Chapter 1. Although they are mostly from the early part of the middle phase of the culture they are likely to be typical also of the early phase of the culture. They are distinguished by a tripartite division of the houses apart from the basic arrangement of five rows of post-holes; these divisions consist of a bedding trench at the northern end, a conglomeration of post-holes at the southern end, and a more open space represented by a Y-configuration of post-holes in the middle. (Waterbolk and Modderman, 1959, 163).

There is little evidence for the flint blade industry of the early phase of the Linear Pottery culture of this region. It is likely that it was to a certain extent intermediate between the industry as seen in the west-central province, and that of the extreme west as seen in Geleen, which again represents more the industry of the early part of the middle phase of the culture. The flint blade industry of Geleen is distinguished by a high proportion of long end scrapers, sickle-gloss predominating on blades longer than 4.0 cm., and the appearance of triangular arrowheads and long sharply retouched blades. However, although the industry certainly differs from that of the more central regions of the Linear Pottery culture, it has no important microlithic elements, and must be derived basically from the industries which are associated with the pottery of the early phase of the Linear Pottery culture further east. The industry will be discussed again in the next chapter concerning the middle

phase of the culture.

The polished stone implements of Geleen already show later Linear Pottery elements in that true high-backed "shoelast" axe/adzes occur, along with rectangular axe/adzes with a lower plano-convex cross-section, and the flat axe/adzes which are not as trapezoid as those from the sites further east.

There is very little animal bone material to give any indication of the economy from the sites of the western province of the Linear Pottery culture, and none from the early phase of the culture. The only evidence in this region is from Müddersheim, which is from the later part of the middle phase.

Most of the sites mentioned are surface finds; there is little evidence for burials from the early Linear Pottery culture of this region. The most important site with graves is at Wiesbaden (Biebrich) where there is a series of 4 simple graves, each with a pot, and sometimes an axe/adze, as at Bischleben in Thuringia, but not in any apparent association with a settlement (Mandera, 1963, 32-46).

### Summary

The most striking feature of the initial expansion of the early agriculturalists into temperate Europe, represented by the early phase of the Linear Pottery culture, is the uniformity of the fabric, forms and decoration of the pottery from the most western region to the nuclear province. It is hardly possible to tell whether this uniformity applies to other aspects of the material culture since there is so little evidence for the economy, house types and flint blade industries from the settlements of this phase. It seems likely, however, from the little evidence that there is, that these aspects were not only very similar in this early phase in all the various regions, but that they changed or

developed very little in the succeeding phases of the culture. As mentioned before, chronological divisions are based on the pottery evidence.

From the uniformity of the pottery, and the evidence of Carbon 14 samples which will be discussed in the last chapter, the initial expansion of the agriculturalists represented by the early phase of the Linear Pottery culture seems to have been comparatively quick, with little time-lag between the settlement of the western regions and that of the more central provinces. However, it is possible to see that the earliest phase of incised pottery associated with fine painted pottery of the Starčevo-Körös type is distributed only in the nuclear province of the Alföldi, and the southern part of the eastern province. The earliest phase in the central province (Ia) appears also in the nuclear and eastern provinces where it is associated with fine painted pottery of the Esztár type; in the central province, it is never associated with painted pottery.

The settlements with the earliest type of incised ware become more sporadic as the agriculturalists expanded westwards, and hardly occur at all in the western province. During the next phase in the development of the pottery (Nuclear and Eastern provinces: II; Central, west-central and western provinces: Ib) there was a corresponding increase in settlements and expansion of the area of settlement as far as the Rhine valley in the west, the Sava in the south, and just north of the Carpathians in the north.

A faster development in the manufacturing and decorative techniques is apparent in the nuclear and eastern regions; the speed of development increases even more in the middle phase of the culture. Painted pottery is still associated with the pottery in these regions.

In the central and west-central provinces, however, the pottery remains comparatively unsophisticated, although it is still possible to see a close parallel in the development of decorative styles of the eastern and nuclear regions with those of the central and more western provinces.

The flint blade industry shows basic similarities in all the regions in that the predominant implements are the short blade with "sickle-gloss" and the longer blades with the side retouch and the bulb of percussion retained. In the nuclear and eastern regions blades of obsidian are more frequent.

The polished stone implements include small trapezoid flat axe/adzes, and, in the central and more western regions, longer rectangular axe/adzes with a slightly plano-convex cross-profile.

Evidence for the economy of the early phase of the Linear Pottery culture of this phase comes only from the settlements of the west-central region, where 90% of the animal bones are those of domestic animals, especially cattle.

Burials consist exclusively of crouched inhumations lying on their side, without grave goods, except in the central and more western regions where graves were often accompanied by beads and necklaces made of Mediterranean spondylus shells, pots, or polished stone axe/adzes. In the west-central and western provinces it seems possible that there was evidence for special places in the settlements reserved for burials. In most cases, however, the burials of the Linear Pottery cultures are among the houses or building pits.



## CHAPTER II

### The Middle Phase of the Linear Pottery Cultures

AP IV

The middle phase of the Linear Pottery cultures is distinguished by a consolidation of settlement in the areas already inhabited, and a great expansion in settlement by the early agriculturalists represented by the Linear Pottery culture. By the end of this phase the culture is seen in its maximum distribution area, from the lower Rhine valley, to the middle Dniester valley. A different speed of development and a varying evolution of styles from the uniform prototype of the early phase, is evident in the pottery of the different provinces of the Linear Pottery culture in the middle phase. The trend towards more sophisticated styles and better fabric, which was seen in the pottery of the nuclear and eastern provinces at the end of the early phase of the culture, continues and increases in the middle phase so that any features which the culture in these areas has in common with the regions further west becomes very difficult to distinguish. However, their uniformity in the early phase, and their clear development from that phase, indicates that the settlements of the nuclear and eastern provinces should be treated as a part of the large group of Linear Pottery cultures.

Two main phases of development are evident in the middle phase of the culture in all regions. In the western, west-central, and central provinces, the area of the "classic" Linear Pottery culture, the pottery has been classified into two sub-phases known as "Middle" and "Later", or II and III, or III and IV "early notenkopf" and "late notenkopf", etc., in the classification systems discussed in Part II, Chapter 4. In this study they will be referred to as II and III or II/III.

In the Eastern province, a great deal of analysis of the pottery has recently been made, and detailed classification of the material of the so-called Bükki culture (Lichardus, 1962a, 47-61; 1963, 5-25; Korek and Patay, 1958); these include phases of the Bükki culture known as Pre-Classical I and II (ABI and ABII), and Classical Bükki I, II and III (BI, BII, BIII). For simplicity's sake, in this study, Pre-Classical Bükki I will be regarded as representing the first part of the middle phase of the Linear Pottery culture in this region, referred to as III; and Pre-Classical Bükki II and Classical Bükki I will be regarded as representing the second part of the middle phase of the culture, referred to as IV.

In the nuclear region, the problem is much greater, since no such complete analysis of the material has been made. Names such as Tisza I and II, Szakalhat-Lebő, Szilmeg, etc., have been referred to at random, often with little definition in time or place. At present, it is clear, firstly that there are at least 4 local groups involved in the material of the middle phase of the Linear Pottery culture in the Alföldi and Tisza basin, and secondly that there is more than one stage of development in the middle phase, and that there is continuous evolution of pottery styles and forms into those of the late phase of the culture which will be discussed in the next chapter. It is possible to distinguish the four regional groups with very little difficulty including the lower Tisza basin, the middle Tisza basin, the centre of the Alföldi, and the transitional region in the north-east part of the Alföldi. The chronological divisions, however, are much more difficult to define; the stage of research into the material of the Linear Pottery culture of the nuclear region is very similar to the stage reached in the research into the material from the central

and west-central region when Soudský first classified the material and could only distinguish a middle phase of the culture, although he could see that with more systematically excavated and documented material it would eventually be possible to subdivide the material of the middle phase (Soudský, 1954, 95-98; 1956, 410). After 10 years of excavation at Bylany etc., it is now possible to subdivide the material of the middle phase of the culture in the central province and the more western regions. However, at this stage, any subdivision of the material of the middle phase of the culture in the nuclear region would be very tentative and based only on subjective typological evidence. It is proposed, therefore, to treat all the material of the nuclear region of this phase as a whole, referred to as phase III.

1) The Hungarian Plain and the Tisza Basin (Nuclear Province).III.

A) The Lower Tisza valley - in association with the development of the pottery in the middle phase of the culture in the Alföldi, there was the appearance of pottery, which is linked very closely to the contemporary pottery of the middle Tisza valley, in the lower Tisza valley including Hungary south of the Koros river, and, to a certain extent, areas peripheral to this in the Banat regions of Yugoslavia and Rumania.

Previous to the occurrence of Linear Pottery in this area, in the period contemporary with the early phase of the Linear Pottery culture of the Alföldi, the lower Tisza Basin had been heavily populated by fishing/agricultural settlements represented by the Körös culture. The features of this culture have already been described in previous chapters under the headings of painted pottery, flint blade implements, economy and houses etc. The material culture is linked essentially with that of the early neolithic cultures of south-east Europe in

Yugoslavia, Bulgaria, Greece and Anatolia, consisting of the three groups of pottery including fine painted ware, fine plain ware, and coarse chaff-tempered ware, with an economy based on sheep-breeding, a macrolithic flint blade industry, small nuclear family houses of wattle and daub on a light wooden framework, and many other south-eastern elements such as clay female figurines, clay stamp-seals, bone spatulae etc.

This area of south-east Hungary and Yugoslav and Rumanian Banat, however, as mentioned previously, is a transitional one between the Mediterranean woodlands of south-east Europe and the temperate woodlands of central Europe, and the Körös culture, accordingly, shows a certain amount of adaptation and impoverishment, especially the latter, such as a decrease in painted pottery and in increase in the coarse rusticated ware, and a strong dependance on fishing as a source of food.

The culture is more a poor version of the innovating Starčevo and Karanovo I cultures and represents a population more concerned with conserving the traditions of a culture, (which was evolved in the Mediterranean environment of south-east Europe), in a transitional environment in which the regional limits, where such an economy and settlement pattern was possible, had been reached.

The Linear Pottery culture, on the other hand, is a culture which was developed in an environment which was less transitional and more the Temperate environment of central Europe than south-east Hungary, and which represents a population who, if they did not deliberately adapt, responded constructively to the differing physical conditions, as may be seen in the features discussed in Parts I and II; the culture may thus be termed an innovating one, whereas the Körös culture is a conservating culture.



It is logical, therefore, that, as the Linear Pottery culture of the Hungarian Plain developed and the settlement area expanded westwards and northwards, the static Kőrös culture to the south would tend to adopt features of the Linear Pottery culture, and eventually would lose its identity as a separate culture and would be absorbed by the constantly developing Linear Pottery culture. Whether this absorption and expansion by the Linear Pottery culture into this region in the middle phase of its development represents an actual movement of people into south-east Hungary and down the Tisza valley from the Alföldi and middle Tisza valley is a question open to speculation. One can only analyse which features of this group of the Linear Pottery culture are inherited from the culture in the nuclear region, and which are retained from the preceding Kőrös culture. A third element to be reckoned with in the Linear Pottery culture of south-east Hungary is the vigorous innovating culture known as Vinča-Tordoš, which, in this phase of its development (B1) had reached its maximum area of expansion, and was centred especially along the Danube and south and north of the river.

The traditions of the Vinča-Tordoš culture were very similar to those of the Kőrös culture, the main difference being in the pottery. There are three main groups of pottery in the Vinča and related cultures:

- a) very coarse, though not predominantly chaff-tempered rusticated ware.
- b) coarse ware, thick, but often with a smoothed surface; brown/buff/grey colour; often decorated with incised patterns, which, in the Vinča-Tordoš area, takes the form of filled-in bands, similar to "pattern 200" of the western provinces of the Linear Pottery cultures.
- c) fine, thin ware, with a black or grey colour grading towards brown and

buff, depending on the firing conditions; the surface was highly burnished and often decorated by fine shallow fluting or channelling especially on the upper part of the pot. The fine pottery was also incised, in the same way as the coarser ware (Garašanin M., 1951, 18-21, 32-37).

As mentioned in Part II, Chapter 4, one of the most distinctive forms among the pottery of the Vinča-Tordoš and related cultures was the wide sharply-angled biconical bowl, often with lugs placed at the angle; the sharp angle is also seen on the inner surface of the pot. This form is often placed on a tall thin flaring pedestal, or it has a simple flat base. The tall pedestalled bowls are especially associated with the occasional red-slipped fine ware, and the bi-conical form generally is only associated with the fine burnished ware.

The coarser ware is more often made into cylindrical necked globular pots which are also frequently bi-conical, and provided with ribbon lugs; other forms associated with this ware include small  $3/4$  spherical bowls with short wide cylindrical necks. (Garašanin M., 1951, 21-32).

Other aspects of the material culture represent basically a continuation of the traditions of the early neolithic Starčevo, Körös and Karanovo I cultures, including small nuclear family houses, a macrolithic flint blade industry, clay female figurines, pintadera, spatulae, etc.

The distribution of the Vinča-Tordoš culture is especially concentrated in the Serbian part of the Danube valley, but there are related groups east of this: in south-west Rumania (Oltenia), known as Vadastra I (Berciu, 1961a, 51), south-east Rumania (Muntenia), known as the Dudești culture (Comsa, 1962, 58-61); and south of the Danube in north Bulgaria is the closely related Chotnica I culture; in south Bulgaria, the Veselinovo culture of Karanovo

layer III and, to a certain extent, the material of layer II at Karanovo, consists predominantly of grey or buff burnished pottery undecorated or decorated only by fine fluting, (Georgiev, 1961, 63-71). In the Rumanian Banat the material represents an extension of the Serbian Vinča-Tordoš culture at first (A/B1), and then a local development with an expansion of the settlement area into Transylvania (north-west Rumania); this local variant of the culture is known as the Turdaş culture. (Berciu, 1961a, 48-50).

A detailed description of the settlements, distribution and material culture of the Vinča-Tordoš and related cultures is beyond the scope of this study. At the moment, it is only important to recognise that in the Banat area of Yugoslavia, Hungary and Rumania two elements contributed to the material culture of the settlements on a basis of the transitional early neolithic Körös and Starčevo-Körös cultures. These two elements represent two contemporary cultures which had their centres of stimulus north and south of the Banat area:

a) the Vinča-Tordoš culture etc., distinguished by fine channelled decoration on a burnished surface, incised rectilinear "winkelband" patterns, and sharply-angled bi-conical pot-forms.

b) the Linear Pottery culture of the Alföldi, distinguished by rounded pot-forms, and rectilinear and curvilinear incised lines on an unburnished surface.

Depending on the region within the Banat, and the varying proximity to the two different cultures, the material culture of the settlements shows a varying degree of influence from the two elements. At one extreme, settlements with a purely Vinča-Tordoš material culture, in the south and east part of the Banat, have sporadic Linear Pottery objects or decoration, consisting

especially of incised rectilinear and curvilinear patterns in the pottery decoration. Examples of these occur at the sites of:

- 1) Verbicoara, nr. Călăfat, S.W. Oltenia, Rumania. There is a fragment of a pot with incised simple meanders similar to the contemporary examples in the middle valley of the Tisza. (Berciu, 1960a, fig. 3:3).
- 2) Zorlentul (Mare) nr. Resița, S.W. Rumania. Unpublished; material in Timișoara Museum. Sherds decorated by bands of 4 or 5 parallel lines in rectilinear and curvilinear patterns.
- 3) Turdaș, nr. Alba Iulia, S.W. Transilvania, Rumania. This site represents more the local variation of the Vinca-Tordos culture known as the Turdaș culture. As mentioned before, the site was originally stratified in a similar way to La Tărtăria (Vlassa, 1963, 485-494), but the material was not recorded in its stratigraphical context, so that it is not possible to prove that the sherds, which are very obviously related to the middle phase of the Linear Pottery culture of the Alföldi, were originally associated with material of the Turdaș culture; but from analogies from more scientifically excavated sites such as Lebő and Oszentivan VIII, it is very likely that the sherds decorated by simple incised meanders as well as the pots with a square cross-section which are all found in the sites of the middle phase of the Linear Pottery culture of south-east Hungary, were originally associated with the material of the Turdaș culture settlement (Roska, 1941, Pl, CVIII:1,3; CIX:6; CX:1,5,6,8,13,14,15,16). The more complicated meander patterns are more likely to be related to the similar complicated meanders which developed in the later phase of the Linear Pottery culture in E. Hungary.
- 4) Parta, on the Stari Becej river, south-west of Timișoara, S.W. Rumania. Among the typical Vinca-Tordos material culture there is a large globular pot



similar in shape to those from the earlier part of the settlement at  
 116: Kőkenydomb, nr. Hódmezővásárhely, and decorated by simple incised meanders  
 2,4,5 made of bands of 4 parallel lines. The lines are filled in with white encrusted  
 material; there are also sherds decorated in the style which, as will be shown  
 115:1 below, is very distinctive of the Szakálhat-Lebo group of south-east Hungary;  
 115: these are simple rectilinear and curvilinear patterns of parallel incised lines  
 3-6 which border alternate bands of burnished and unburnished surface; the un-  
 burnished matt surface was painted red after firing. The examples of pots from  
 116:3 Parța which are decorated in this style include an interesting, and quite unique  
 VII:1 anthropomorphic pot.

Another unique object is a biconical pot with a tall, wide flaring neck,  
 decorated by incised lines in a way which is much more reminiscent of the early  
 116:1 decoration in the western provinces of the Linear Pottery culture than of the  
 Vinča-Tordoș decoration; the actual patterns, however, are quite asymmetrical  
 and are never seen in the area of the Linear Pottery culture. (Bercui, 1961a,  
 43; Miloia, 1931, 183; Milojčić, 1951, 120).

5) Idjos, reg. Zrenjanin, N.E. Yugoslavia. Sherds of pottery decorated  
 by combined incised and painted-on-matt decoration which is typical of the  
 Szakálhat group. (Garasanin M., 1951, 74-75; Milojčić, 1951, 120).

6) Crna Bara, reg. Sombor, N.E. Yugoslavia. Sherds with simple  
 incised meanders, and others decorated in the same way as the Szakálhat-Lebo  
 group. (Garasanin M. and D., 1957, 205; Milojčić, 1951, 120).

7) Vinča, nr. Beograd, N.E. Yugoslavia. The site has a large number of  
 imports in all phases of settlement, but especially between the depths of  
 8.5 m. and 6.5 m., that is Vinča B1 and B2 (Garasanin M., 1951, 18), or the

Vinča-Tordoš culture; this is a period contemporary with the middle and part of the late phase of the Linear Pottery culture of central Europe. However, as mentioned before, the depth of the finds at Vinča does not necessarily correspond to its relative age, since no account was taken by the excavator of cultural layers or the horizontal position of the object.

Objects which have been imported from the Linear Pottery culture settlements of the middle and lower Tisza or, at least, which have been inspired by prototypes from there include:

a) the large pot with a wide cylindrical neck, very similar to that from Szegvár (Tűzköves) etc., but decorated also by the red-on-matt method of the Szakalhat-Lebő group; this comes from 7.445 m. depth. (Csallany, 1939, 145-146; Vassic, 1930 - 36, II Pl.69).

b) Sherds decorated in the Szakalhat-Lebő method (Vassić, 1930-36, IV, Pl.44 k, Pl.157). These come from 8.3 m. and 4.3 m. depths respectively.

c) Sherds decorated by simple meander and curvilinear patterns of the middle phase of the Linear Pottery culture in the middle Tisza valley. They come from depths of 8.1 m., 6.9 m., 7.2 m., 5.5 (7.3)m., 6.2 m. (Vassić, 1930 - 36, IV, Pl.44:l,78:a; II, Pl.93,Pl.366).

d) Pot decorated in "Želiezovce" style of the later part of the middle phase of the Linear Pottery culture in the central province; the shape of the pot, however, is more the sharply-angled bi-conical form of the Vinča-Tordoš culture; from 6.6 m. depth (Vassić, 1930-36, II, Pl.54). The Želiezovce style of decoration also appears on the so-called "cat-faced lids", which themselves are typical of the Vinča culture and never occur in the Linear Pottery area.

e) Sherd with "late notenkopf" decoration, from the later part of the middle phase of the Linear Pottery culture in the central province. From a depth of 8.5 m. (Vassic, 1930-36, II, Pl.44:h).

North of this area, around the confluence of the Tisza and Maros rivers, there are a number of settlements, contemporary with those mentioned above, whose material culture shows Vinča and Linear Pottery elements in equal proportions; the pottery of the two cultures has mixed, producing material of the so-called Szakalhat-Lebő group. (Trogmayer, 1957, 19-57); Banner and Parducz, 1948, 40-41).

118: The material includes thick coarse ware with a certain amount of chaff-  
19-20 tempering, with a smoothed surface and decorated by "winkelband" style incised patterns as in the Vinča-Tordoš culture; this same fabric is also decorated, although not so frequently, by simple incised meander patterns as in the middle phase of the Linear Pottery culture of the middle Tisza valley settlements. The forms of this coarser pottery are generally rounded globular pots with cylindrical necks, or simple truncated-cone bowls, always with flat bottoms.

There exists a very coarse fabric which is generally undecorated, or decorated by applied warts or finger-impressions, as rustication; this has often been regarded as representing the Körös culture element not only in this Szakalhat-Lebő group, but also in the pottery of the Vinča culture in the Banat (Banner and Parducz, 1948,40). That may be so, but as mentioned in Part II, Chapter 4, coarse kitchen ware is always the most conservative of all the aspects of material culture, and it is difficult to use it as a criterion for judging the origins or relations of a culture. Among the forms of the coarse

ware are the long flat oval "fish-dishes", which are typical in the material of all the settlements along the Tisza and Danube.

The third group of pottery in the Szakalhát-Lebő group is the fine black ware which grades through grey to buff; the fabric is thin and hard and has a large proportion of fine micaceous inclusions; the surface is incised, by simple rectilinear and especially curvilinear patterns very similar to those of the contemporary settlements of the Alföldi and middle Tisza valley; in between the lines, the surface of the pot is alternately burnished and left matt. The matt surface was painted with red after firing. The forms associated with this fine ware consist predominantly of the sharp-angled bi-conical bowls with flat bases; the Szakalhát-Lebő type of decoration very rarely occurs on the pedestalled bowls. It is difficult to find any prototypes for this combined incised/burnished and red-on-matt decoration; red and yellow paint applied after firing between incised lines occurs in the later phase of the Linear Pottery culture in the pottery of the middle Tisza valley (Tisza II), north-east Hungary (late Bükk) and the central province (Želiezovce II); but the painting never alternates with a burnished surface. it is very likely that the Szakalhát-Lebő style can have contributed to the later painted-on-matt styles, but it seems itself to have been a local development caused by the unique conditions of a mixing of the Linear Pottery and Vinča pottery styles.

It is only through the recent systematic excavations at Lebő, that it has been possible to distinguish the Szakalhát-Lebő group, and to recognise its chronological position. There are a number of other sites which were classed as belonging to the "Tisza culture", such as Kőkénydomb or the "Banat culture",



such as Oszwntivan and Csoka, but it is clear since the excavations at Lebő, and a re-examination of the material from these old excavations, that a number of phases of settlement and cultures are represented on the sites. It is possible, as Banner and Parducz maintain, that part of the Oszentivan VIII settlement is contemporary with the earliest phase of the Vinča culture (Vinča A) (Banner and Parducz, 1948,39), but it is also clear since the recent excavations of the same settlement by Kutzian, that part of the site has material belonging to the later Szakalhát-Lebő group (discussion with I.B. Kutzian in Budapest, April 1965). The site of Oszentivan is typical of the contemporary and preceding settlements of the lower Tisza valley, in that it is on a piece of higher ground which rises above the marshier ground near the Tisza and Maros confluence.

118: The site of Lebő occupies a similar position. Material belonging to  
1-6 the mixed Szakalhát-Lebő group was excavated by Mora in 1928-31 (site A) (Korek, 1960, 44; Mora, 1930, 159-160) and by Trogmayer in 1956 (site C) (Trogmayer, 1957, 19-57). The material excavated by Korek in 1951 (Site B) and part of Trogmayer's material belongs to the later phase of the Linear Pottery culture and is identical to that of the middle Tisza valley (Tisza II).

19: Part of the material from the large site of Csoka, which occupies a  
-10 similar position to Oszentivan, but a little lower down the Tisza, is also contemporary to Lebő A and C, but most of the material is from the later phase of the Linear Pottery culture of the Tisza valley (Tisza II) (Banner, 1960, 1-57). The painted-on-matt decoration hardly occurs in the pottery of the earlier settlement at Csoka, but, on the other hand, the fine pottery is often decorated with fine shallow fluting. Among the coarser sherds there is

a large proportion decorated by the Vinča-Tordoš "winkelband" style, but there are others which are typical of the middle phase of the Linear Pottery culture in the settlements of the Szakalhát-Lebő group and north of them (Banner, 1960, Pl. XX; XXXVIII: 6,10).

118: 7-19 The northern limits of the painted pottery of the Szakalhát-Lebő type seem to have been near the modern Hodmezovasarhely, represented by the settlement of Szakalhát. (Banner and Balint, 1935, 76-96).

117: 3-6 The eastern extension of the painted ware includes part of the lower Mureș/Maros valley in S.W. Rumania, as at Beșenova Veche (Nagy, 1911, 147-164), and occasionally, as shown above, it occurs on sites further south as at Parta and Vinča.

119: 12-15 Just north of Szakalhát, there are several sites, such as Gorzsa (Cukor tanya), part of the Kőkenydomb settlement, Kopancs (Kiss tanya), Szekkutasi, etc., which do not have fine ware decorated by combined incised and painted patterns; the majority of the pottery from these sites consists of coarser ware decorated with similar incised patterns as were seen in the Szakalhát-Lebő group, especially simple meanders made of bands of three or four parallel lines, which are clearly a development from the styles of the early phase of the Linear Pottery culture of the middle Tisza valley and the Alföldi. It is clear that the influence of the Vinča-Tordoš culture decrease markedly north of the Tisza/Maros confluence, for in these sites north of Hódmezővásárhely, there is very little "winkelband" decoration associated with the Linear Pottery incised decoration, although sharply-angled biconical pot-forms do still occur, as well as the globular pot with the narrow cylindrical neck.

This group of sites north of the Szakalhát-Lebő group, and south of the

Tisza/Kőrös confluence have sometimes been referred to as the Gorzsa group (Gazdapusztai, 1962, 3-15), although they could hardly be said to constitute a separate culture. Their material is different from that of the Szakalhát-Lebő group only in the matter of the degree of influence from the Vinča-Tordoš culture; in the same way the settlements further north differ from those south of the Kőrös river.

119:11 North and east of these settlements, in the region of Békés and along the south bank of the Kőrös, there are settlements which have been thought to make up a separate Devavanya group of the middle phase of the Linear Pottery culture in this region; however there is much confusion as to the spatial limits of the various groups in this region, and it is probably simpler, at this stage, to refer to it all as Linear Pottery, rather than to classify it needlessly (Korek, 1960, 45; 1961, 9-24).

Apart from the pottery, the material culture of the settlements in south-east Hungary, west Rumanian Banat and north Yugoslav Banat, in this period is very similar.

The animal bone material from the settlements of Lebő and Gorzsa have been analysed and give an indication of the economy of the middle phase of the Linear Pottery culture in this region (Bökönyi, 1957, 61-78; 1959, 53). The analysis shows that approximately 60% of the bones are of domestic animals which is a similar proportion to that shown by evidence from the Kőrös culture settlements (Bökönyi, 1964, 87-93). Of these domestic animal bones, approximately 70% are from cattle, 15% from pigs and 6% from sheep/goats; this high proportion of cattle, and small proportion of sheep/goats is quite different from the preceding Kőrös culture, where sheep/goats formed 70% of the domestic

animal bones, and cattle 26% of it. It is presumed that the development in the importance of cattle in this region was stimulated by the Linear Pottery culture of the Alföldi, although, as mentioned in the previous chapter, there is no analysis of the domestic animal bones from the settlements of the early Linear Pottery culture of that region. Very little work has yet been done on the animal bone material from the settlements of the Vinča-Tordoș culture, and it is possible that the increase in the domestic cattle bones is due to influence from that culture; or, perhaps as with the pottery, the economy reflects a mixing of the two cultures.

Among the wild animal bones from Gorzsa and Lebő C, wild cattle (Aurochs) appear to have been the most important, as well as red deer and wild pig, with a relatively high proportion of fish and turtle.

The blade industry consists predominantly of flint, but obsidian from the Bukk mountains or from the Transilvanian Carpathians is a frequent occurrence, as seen in the evidence from Csoka, Lebő C, Szakalhát, Kőkenydomb, etc. Blades of obsidian or flint are simple, with little retouching; they are generally rather longer than those of the Körös culture, such as the examples from Kopancs (Zsoldos). Sickie-gloss occurs on the flint blades in a diagonal area across one corner or, especially on the blades above 3.5 cm. in a narrow area down one cutting edge, which becomes wider at the end of the implement, which is opposite that with the retained bulb of percussion.

The most important working implement, however, is obviously the polished stone axe/adze; these increase in number on all the settlements of this region, and are much more frequent than on the settlements of the preceding Körös culture and early Linear Pottery cultures. The most common type are the rectangular or



or slightly trapezoid implements with a flat rectangular cross-section; or narrower implements, of a rectangular shape and with a high-backed plano-convex cross-section; these "shoelast" axe/adzes, however, are not as frequent in the settlements of the northern Banat as they are in the settlements of the more central regions of the Vinča-Tordoš and middle Linear Pottery cultures.

Among the polished stone implements there are also a number of perforated axes which have been published alongside the flat and plano-convex axe/adzes; however, these have all been published from sites such as Csoka and Kőkenydomb where there is also material from the late phase of the Linear Pottery culture in this region (Tisza II), and it is probable that these are to be associated with this later material, since on sites where the material is all from the middle phase of the culture, such as Szakalhat, the perforated axes are quite absent.

The surface houses which are associated with the material of the middle phase of the Linear Pottery culture in this "northern Banat" region have been discussed in Part II, Chapter 1, in the section concerning typical houses of the Linear Pottery culture. The houses which have been excavated at Kőkenydomb, Lebő C, Gorzsa etc., are all much more related to the small rectangular nuclear family houses than to the long rectangular houses represented by five rows of post-holes from the more central regions of the Linear Pottery culture. The houses from 2.50 m. - 4 m. wide, and 6-10 m. long, built with a predominantly daub construction on a light wooden framework. The floors were occasionally plastered as at Kőkenydomb (Banner, 1951, 27-36) and Lebő C (Trogmayer, 1957, 23-34), and very commonly had a round hearth inside, or even an oven of the type seen in the Körös and Linear Pottery settlements; these are low, round, and built of clay on a stone foundation (Gazdapusztai, 1963, 21-46; Soudský, 1962, Pl. XXIX: b).

Other features of the material culture from these settlements reflect a continuation of the traditions of the early neolithic cultures of south-east Europe, as is seen also in the material of the Vinča culture. Nearly all the sites of the Szakalhat-Lebő group have produced clay human figurines and anthropomorphic pots; most of these appear to be rather poor versions 71:1-2,4 of the contemporary figurines of the Vinča-Tordoš culture, such as those from Csoka, Lebő and Szakalhat; north of the settlements with the strong Vinča-Tordoš admixture, figurines occur at Kőkenydomb, Gorzsa, and Kopancs (Kiss tanya). The very elaborate anthropomorphic pots found in a house from Kőkenydomb were associated more with material of the late phase of the Linear Pottery culture (Banner and Korek, 1949, 7-25).

Clay stamp-seals, clay "spindle-whorls", clay "fish-net"weight clay ladles and bone spatulae which are all typical in the material culture of the Körös settlements, and to a certain extent in the Vinča-Tordoš settlements occur also on the settlements of the Szakalhat-Lebő group, and those north of them. Many of these objects, such as clay weights, spindle whorls, etc., are obviously connected with river-side and lake-side occupations, and continue in the settlements of the middle and lower Tisza valleys, because the settlements occupy similar sites to those of the Körös culture.

Inhumation burials from the Linear Pottery culture of this phase have been excavated at Devavanya, just south of the Körös river. It is presumed that the five crouched inhumations covered in ochre are to be associated with the settlement representing the middle phase of the Linear Pottery culture but they occurred 800 m. away from the settlement (Korek, 1961, 9-24).

### B) The middle Tisza and lower Körös valleys

The middle phase of the Linear Pottery culture includes pottery which was for a long time referred to as the Tisza I culture, although this culture was never defined in detail; the general characteristics consisted of pots of a straight-sided "bucket-shape", hemispherical pots etc., decorated by incised meanders, and occasionally red on matt painting after firing (Tompá, 1929, 39-48, 64-65).

Since the excavations at Szegvár (Túzköves) it is possible to see that there was continuous development from the pottery of the early phase of the Linear Pottery culture with the simple curvilinear and rectilinear incised patterns discussed in the previous chapter, through intermediate stages to the predominantly rectilinear complicated patterns of the late phase of the Linear Pottery culture in the Tisza valley (Tisza II). The pottery referred to as Tisza I forms one of these intermediate stages. Until there is more evidence of the early part of these intermediate stages from other sites, or until the Szegvár (Túzköves) material is published or made available for detailed study, it is necessary to be content with recognising the early and late extremes of this phase, and the fact that typologically, there seems to be continuous development from one to the other.

Among the pottery of the intermediate middle phase of the Linear Pottery culture in this region, as seen at Szegvár (Túzköves) (material unpublished in Szentes Museum), there are sherds of the fine pottery decorated by the combined incised/burnished/red-on-matt style of the Szakalhat-Lebő group; the patterns are predominantly curvilinear and are obviously developed from the patterns of the early phase of the Linear Pottery culture in this region as

seen in Abadszalok etc.

There are also sporadic sherds of thicker material decorated by "winkelband" incised patterns similar to those in the lower Tisza valley. In Szolnok museum there is stray find of a pot decorated by incised "notenkopf" patterns from Szolnok (Paladicspuszta), in a very similar way to the contemporary pottery of west Hungary (Korek, 1960,20). Sporadic sherds of buff pottery painted with black curvilinear patterns, typical of the Alföldi itself, also occur in sites of the middle Tisza valley (Csalog, 1955, Pl. VI:3).

The majority of sherds, however, represent intermediate stages of development between the simple rectilinear and curvilinear patterns made by one, two or three parallel lines of the early phase of the Linear Pottery culture of the nuclear region, and the very complicated rectilinear patterns, especially meanders, of the late phase of the Linear Pottery culture in this region (Tisza II). The fabric is generally tempered by fine micaceous inclusions, and is hard and comparatively thin; the colour is very commonly orange/buff; the surface tends to be slightly rough and gritty to the touch, and is never burnished or deliverately smoothed.

Forms include hemispherical or  $\frac{3}{4}$  spherical bowls on flat bases, bowls with a square cross-section, straight-sided "bucket" shaped pots, and globular pots with cylindrical necks. Among these latter there is the group of very large globular pots with wide tall cylindrical necks, sometimes decorated on the neck with what have been described as anthropomorphic features; the pots are over a metre high, and must be storage vessles, similar in function to those of the Linear Pottery settlements of the more



central and western provinces, as at Bylany (Soudský, 1962, 192). The pots occur on a number of sites of the middle Tisza valley, including Szegvár (Túzkőves), and are seen outside this area in Vinča, and possibly in the settlements of the central province of the Linear Pottery culture such as Močovice (Csallany, 1939, 145-146; Quitta, 1960, 173-177).

Decoration is by incised lines, with rectilinear patterns, especially meanders, becoming increasingly popular; the patterns are at first made of simple bands of three or four parallel lines which become increasingly complicated and interlocked.

Very few sites in the middle Tisza valley have been at all systematically excavated, and evidence for surface houses comes only from Szegvár (Túzkőves), where several small rectangular houses were excavated; the evidence indicates that the methods of construction by clay on a light wooden framework were very similar to those of the lower Tisza Linear Pottery settlements, the preceding Körös settlements and the contemporary Vinča-Tordoș settlements.

Evidence for the economy of the settlements of the middle phase of the Linear Pottery culture in this region is also predominantly from the bone material from Szegvár (Túzkőves) (Bókónyi, 1959, 48-49). Approximately 55% of the animal bones are those of domestic animals, so that there are almost equal proportions of domestic and wild animals, almost the same as the evidence from the contemporary sites of the lower Tisza and from the preceding Körös sites. Of the total number of domestic animal bones at Szegvár (Túzkőves), 68% are from cattle, 18% from pig and 6% from sheep/goats; thus the predominance of cattle and the unimportance of sheep/goats is also in conformity with the economic pattern in the lower Tisza.

Among the wild animal bones, those of wild cattle (aurochs) predominate, while red deer and wild pig are also comparatively important and there are a large number of fish and turtle bones. Thus the economy was based equally on domestic and wild cattle (although there are twice as many domestic as wild cattle bones) with fishing, hunting red deer and wild pig also important.

Flint blades include especially longer blades, 4.5 - 7 cm., with the bulb of percussion almost invariably retained. Sickle-gloss occurs occasionally on the blades, especially in a narrow area, down one edge; obsidian blades also occur.

Polished stone implements include the same groups as in the lower Tisza valley: rectangular/trapezoid flat axe/adzes, although these latter are not very frequent.

The traditions of the south-east Europe early neolithic cultures are not as strong in the material culture of the settlements of the middle Tisza valley as in the lower Tisza valley; figurines and anthropomorphic pots occur as at Szegvár (Túzkőves), although it is likely that these are all from the later part of the middle phase or from the late phase of the Linear Pottery culture if the analogies in the Vinča-Pločnik (C) culture as at Fredonica etc., or the decoration on the anthropomorphic pots are any indication. (Csalog, 1959, 7-38).

Clay spindle whorls and clay "weights" occur frequently in the settlements of this phase in the middle Tisza valley, but other features which belong more to the traditions of south-east Europe such as clay stamp-seals, bone spatulae, clay spoons etc., are much rarer in the material culture of this region than in the lower Tisza valley.

Burials occur at Szegvár (Tűzköves), consisting of crouched inhumations in shallow pits among the houses; they are not accompanied by any grave-goods, so that there is no indication, except from their horizontal and vertical position, that they are associated with the settlement; they are covered in red ochre which is very characteristic of the late eneolithic graves in east Hungary, but rare in the settlements of the Linear Pottery culture.

C and D) The Alföldi (central and north-eastern part)

In the more central settlements on the Alföldi, and in the transitional region in the north-eastern part of the Alföldi, a fast development in the pottery decorative styles and techniques in manufacture of the fabric may be seen. The development on the incised decoration is very similar to that of the eastern province in that there was a tendency towards a multiplication of the incised lines making the bands of the pattern. This was made possible by the fabric being harder and finer so that there was a smooth surface for the execution of fine thin incised lines. Whereas, in the eastern province, the patterns consisted much more of rounded arches in this period, the patterns in the Alföldi were dominated by bands of wavy lines; in the north-east part of the Alföldi, these form interlocking arches, or are combined with simple rounded arches made of straight lines as in the eastern province.

On 25 out of the 43 settlements of the middle Linear Pottery culture of this region, this style of incised ware was associated with fine buff ware which has a self-slip and is decorated with black/brown painted curvilinear patterns made of bands of thin parallel lines bordered by thick stripes. The close relationship which the fabric and patterns of this pottery have with

the fine red-slipped ware with black rectilinear painted stripes (Esztar type) is very clear. The two types are obviously not contemporary, since at Tiszavasvari (Keresztfal) etc., the red-slipped ware is in close association with incised pottery of the early phase of the Linear Pottery culture on the Alföldi, and the black-on-buff ware is found, for instance at Michalovce

131:8-9 (Hradok) in S.E. Slovakia in a pit which only has incised pottery of the middle phase of the Linear Pottery culture of the Alföldi. (Vizdal and Siska, 1961, 872).

On other sites of the Alföldi, especially in the transitional region, the same incised pottery with patterns made of wavy lines occurs in association with contemporary sherds from the eastern province (Bukk AB2), as at Kenezlő, Tiszavasvari (Páptelekhat), Bodrogkeresztur, etc. Thus, at present, it would seem that the black-on-buff painted ware is contemporary to a certain extent with Classical Bukk I (B1), mostly with Pre-Classical Bukk II (AB 2), and with Pre-Classical Bukk I (AB 1).

In some of the sites of the central part of the Alföldi, such as Tiszavasvari (Keresztfal), Tócsópart (Bleuerföld) and Szilmeg, the black-on-buff painted ware is accompanied by pottery which has a white slip on which very similar patterns are painted in red. The red-on-white decoration has not been found in any of the settlements of the middle phase of the Linear Pottery culture in the transitional region of the north-east Alföldi. It does occur, however, in the eastern extension of the culture in north-west Transilvania and north-west Crişana (N.W. Rumania). In the eastern part of the Alföldi in E. Hungary, the pottery decoration becomes increasingly painted in the black-on-buff style or red-on-white style, and on some sites in the Debrecen area, such as Zsáka (Vizesi tanya) and Debrecen (Tócsópart),



the pottery decorated by incised lines forms a very small part of the total. In the north-west Rumanian sites, such as Deventului and Porolissum, both nr. Oradea, on the Crisul Repede, this tendency can be seen to continue so that the

121: black-on-buff and red-on-white painted pottery of these sites is not accompanied  
10-17 by any incised pottery (the incised pottery at Deventului is much more likely to belong to the later Cotofeni culture). (Vlassa, 1961, 17-25).

When there is no pottery which is decorated by incising, one of the most important criteria for distinguishing the Linear Pottery cultures is missing, so that it is not really possible to talk of the material of these north-west Rumanian settlements as belonging to the Linear Pottery cultures; however, the development of the black-on-buff painted pottery from the early Eszlar pottery of the Linear Pottery culture of the Alföldi and its association with the incised pottery of the middle phase of that culture would indicate that the spread of the painted pottery, and perhaps other aspects of the material culture, was from the centre of the Alföldi to its eastern edge, rather than in the other direction. The whole question of the effect of this painted pottery of the Alföldi on the subsequent painted pottery of Transylvania will be discussed in a separate chapter in Part IV.

The forms of the pottery of the Linear Pottery culture in the Alföldi, are similar for both incised and painted wares; biconical bowls are especially frequent with lugs applied at the rounded angle. Also simple hemispherical bowls, straight-sided truncated cone bowls, and shallower bowls with wavy or straight rims also occur; occasionally, there are bowls on low flaring hollow pedestals, or disc bases, but most of the pots have flat or concave bases.

The excavations of the settlements of the middle phase of the culture, as with those of the early phase, have generally been on a small scale, consisting of long pits or culture layers in which an occasional fireplace or hearth area appears, as at Szódadomb and Számossaly; at the site of Oros I, however, north of Nyíregyháza, there is evidence for possible surface houses associated with building pits, including one 4.70 x 2.0m. (Korek, 1951, 68-72). If this is so, it would indicate that the house type of the Alföldi Linear Pottery settlements is related more to the traditions of south-east Europe, including the Kőrös and Vinča cultures, with small rectangular nuclear family houses, rather than to the long rectangular house of the central and more western provinces of the Linear Pottery culture.

The evidence from the animal bone material from the sites of Szilmeg and Basatanya, in the western half of the Alföldi, nr. Polgár, does not indicate any relationships with the traditions of the south-east European neolithic settlements from the point of view of the economy. (Bökönyi, 1959, 49-50). At Szilmeg, approximately 75% of the animal bones are from domesticated animals, which is a much greater proportion than in the contemporary settlements of the middle and lower Tisza valley, or in the preceding Kőrös culture sites. Of the total number of domestic animal bones, 44% are from cattle, 42% from pigs and 7.5% from sheep/goats, although the individuals show a slightly higher percentage of cattle; thus, although sheep/goats are in the same proportion as in the middle and lower Tisza valley, pigs are of much greater importance, even as much as cattle. Among the wild animal bones, those of wild cattle are almost non-existent, as are those of fish; the majority are from wild pig, roe deer and red deer.

Among the blade implements, those of flint and obsidian appear in equal quantities; sickle-gloss appears generally on the flint blades which are longer than 4.5 cm. in an area across one corner, or slightly down one edge, always at the opposite end from the retained bulb of percussion. There is an interesting increase in the sites of this phase of long end-scrapers, with retouching often down the edges as well as at the working end, as seen at Oros II.

As in the Tisza valley settlements, the chief working tools are the polished stone axe/adzes, especially the wide rectangular, or slightly trapezoid implements with a flat rectangular cross-section. The narrower implements with a plano-convex cross section are much rarer in the Alföldi.

Burials occur on a number of sites, but are generally without grave-goods, or any special position in the settlements. When still in their original position, as at Hajdúszóköz and Szilmege, they consist of crouched inhumations lying on their side; those from Szilmege are reported to be covered in red ochre in the same way as those from Szegvár (Tűzköves) and Dévaványa. (Kutzian, 1963, 410).

## 2) The Eastern Province III & IV.

Settlement in the caves of north-east Hungary and south-east Slovakia continued in the middle phase of the Linear Pottery culture, and the settlement area was expanded to include the caves in the Spiš district of north-east Slovakia, and open settlements along the valley of the Torysa river which flows from the Spiš district to Košice in south-east Slovakia, and eventually into the Tisza. Thus the Linear Pottery culture of the eastern province, distinguished in this phase by the earlier development of the so-called Bükk

culture, was diffused into north-east Slovakia, and even sporadically through the gap in the Carpathians made by the river Poprad into south-east Poland, where material of this type occurs on occasional sites such as Zofipole which have material predominantly of the central province of the Linear Pottery culture and will be discussed in the next section. (Kulczycka, 1961; Kulczycka and Kozłowski, 1960, 41-54).

The pottery of the eastern province has been well excavated and analysed in detail so that various general stages in the continuous development of its fabric, forms and decoration have been distinguished (Lichardus, 1963, 5-25; Korek and Patay, 1958). As mentioned above, these are referred to as Pre-Classical Bükki I, II and Classical Bükki I, II, and III. The middle phase in the general development of the Linear Pottery culture in this region is represented by the first three of these phases. There is a marked development in the fabric continuing the trends of the last part of the early phase of the culture (Phase II or Early Bükki); these include a gradual predominance of mineralogical inclusions in the fabric and an improvement in the technique of its manufacture, so that it was made increasingly thinner, harder and finer, with a smooth often polished surface which acted, as in the central part of the Alföldi, as a suitable base for the fine incised lines of the decoration.

Many of the forms which occur in the Alföldi, also occur in the pottery of the eastern province; in this early part of the middle phase (III) these include deep hemispherical bowls which become more predominantly globular in the later part of the middle phase, as well as pear-shaped; the bases are always flat or concave; in the earlier part, however, as seen in Kapusany,



there are a large number of wide bowls with wavy rims on comparatively tall wide conical hollow pedestals. It is also possible to see in this early part of the middle phase a development from the form consisting of a globular pot with a wide tall cylindrical neck, as seen in the early phase of the culture at Bodrogkeresztur; in the early part of the middle phase, as at Kapušany, this form is seen in the biconical pots with a tall inverted truncated cone neck (or slightly flaring neck).

Elaborate hollow perforated lugs, which might be interpreted as spouts, are very characteristic of the middle and late phases of the Linear Pottery culture in the eastern province, and their prototypes may be seen in the spouts with a single perforation of the early phase. These also occur to a certain extent in the contemporary pottery of the transitional region in the north-east Alföldi, as at Tiszadob (Ókenéz).

Decoration of the pottery also continues the trends seen at the end of the early phase of the Linear Pottery culture in this region; in the early part of the middle phase (Phase III) there are two basic sets of patterns in the incised decoration which occur on the same sites but in different proportions. Lichardus interprets these as representing, on the one hand, the end of the development of the Linear Pottery culture in east Slovakia/N.E. Hungary, and on the other hand early stages in the development of the 145 Bükk culture. The former is represented by the pottery at Kapušany and related settlements in north-east Slovakia and Barca I and other sites near Košice, in the lower valley of the Torysa in south-east Slovakia; the patterns consist predominantly of rectilinear designs made by three or four parallel lines, many of them similar to the incised decoration of the

contemporary pottery of the transitional region of the north-east Alföldi; the latter is represented especially by the pottery of cave settlements in the Slovak Karst and Bükk mountains. It consists in more predominantly curvilinear patterns, especially rounded arches, made by three or four thin parallel lines. Patterns of both types occur together on most sites, but those with the curvilinear arches predominate in the cave settlements, and those with rectilinear patterns including meanders and wavy lines predominate in the open sites of the Torysa and related valleys. It is possible that these latter are to be interpreted as a local group, representing a mixture of decorative styles of the eastern province proper, and of the transitional region, just to the south-east, in the north-east part of the Alföldi. (Lichardus, 1964, 857-858).

In the later part of the middle phase of the eastern province, the decorative style which is possibly related to that of the Alföldi is absorbed completely by the quickly developing "Bükk" style which was associated with the cave settlements; in this later part of the middle phase (Phase IV), however, the pottery decoration becomes uniform in the cave settlements and open settlements of north-east Hungary, south-east Slovakia, and north-east Slovakia, as far as the Polish border. The decoration of the pottery is characterised by rounded, tending towards pointed arches, made by five to eight or nine lines which are still relatively wide (up to 1 mm. wide) and far apart when compared to the very complicated patterns of the late phase of the Linear Pottery culture in this region (Phase V --Classical Bükk II and III). The rims of both parts of the middle phase are often defined by a broad band made by five or six parallel lines.

Occasionally on sites of this later part of the middle phase, such as the caves of Žehra and Poráč, near the watershed of the river Hornad which flows into the Torysa at Košice and the river Hron which flows into the Danube in south-west Slovakia, the incised ware typical of the eastern province is associated with sherds of the contemporary "late notenkopf" and "Zeliezovce" styles typical of the later part of the middle phase of the Linear Pottery culture of south-west Slovakia.

The only evidence for structures from the sites of the middle phase of the Linear Pottery culture in the eastern province, even on the open sites are long pits which should be interpreted more as building pits than dwelling pits.

There is also very little evidence for the economy of the settlements of this phase. The analysis of the animal bone material from the open settlement of Borsod (Dérékegyháza) was made on a basis of only 96 bones which are rather few for calculating percentages or indicating the economic pattern (Bökönyi, 1959,50). However, it is significant that of the total number of bones 77 are those of domestic animals, representing 29 individuals, whereas only 16 are from wild animals representing 8 individuals. Of the domestic animal bones, 71% are from cattle, and the percentages of pigs and sheep/goats are almost equally 15%, although the percentage of individuals shows rather more pig. Among the wild animals, red-deer were the most numerous. It seems clear, therefore, that the economy was not that of a hunting/fishing population who had become acculturated to the agriculturalists' way of life, as was thought at one time. However, the evidence from Borsod does not reflect the economy of the settlements in the caves of the eastern province,

and this may have been slightly different, even if other aspects of the culture were similar.

There is a theory that the cave sites and open sites with the material culture of the middle phase of the Linear Pottery culture represent the same population, but that the cave sites are winter settlements, and the open sites are summer settlements. (Barta, 1960, 14-15).

The flint and obsidian blade industry reflects the purely "neolithic background" to the population of this region. As mentioned in Part I, Chapter 2, there is very little evidence for a preceding or contemporary mesolithic population with an economy based on hunting and fishing in this region of east Slovakia/N.E. Hungary, and the blades associated with the Linear Pottery (Bukk culture) are essentially macrolithic, consisting of flint blades 4-7 cm. long with the bulb of percussion retained, and a glossy area occasionally across one corner; the obsidian blades are generally smaller, with an average length of 2 - 3.5 cm., as may be seen from the evidence at Borsod, Domica, Búdöspester, Ardovo etc.

Polished stone implements include especially the wide rectangular or slightly trapezoid axe/adzes with a flat rectangular cross-section which occur on every site; these also occur with a low plano-convex cross-section. The narrower rectangular axe/adzes with a higher plano-convex cross-section are much less frequent.

Burials, consisting of crouched inhumations, have been excavated at Kólyuk cave and the open settlements of Malyinka and Abaujdevcser and Onga (Korek, 1957, 14-24). At the latter three sites the burials were accompanied by pots as grave goods; 3 pots each at Malyinka and Onga, and 1 at Abaujdevcser.



3) The Central Province II and III (W. Hungary, E. Austria, Moravia and S.W. Slovakia).

The middle phase of the Linear Pottery culture of the central province is distinguished by a great increase in the density of settlements in the regions already settled, especially Moravia, and an expansion of the culture representing the earliest agricultural communities to the regions north of the Carpathians, on the loess deposits along the valleys of the rivers which flow from the northern slopes of the Carpathians, such as the Oder, Vistula and Dniester; the material culture of these settlements will be discussed in the next section. At the moment, it will suffice to say that the route of the expansion to the other side of the Carpathian massif seems to have been through the pass near the present Opava which has been made by the watershed of the river Morava and the river Oder; there is dense settlement by communities represented by the Linear Pottery culture, especially the later part of the middle phase, in the Opava region, and continuously southwards down the Morava and its tributaries to the Danube, and northwards down the Oder and the nearby Vistula.

The dense settlement continues along the Danube, and in the lower valleys of the rivers Vah and Nitra in south-west Slovakia; there is very little evidence so far for settlements of the Linear Pottery culture of the central province in the higher valleys of these rivers; nor does the typical pottery of the middle phase of the culture occur frequently in the upland settlements of east Slovakia. It is much commoner, in fact, to find sherds typical of the later part of the middle phase of the Linear Pottery culture of the eastern province in settlements in south-west Slovakia and even south-west Poland whose material culture is predominantly that of the

later part of the middle phase of the culture of the central province (Barta, 1956, 637; Kulczycka and Kozłowski, 1960, 45-48).

In the regions along and south of the Danube, that is west Hungary and N.E. Austria there are comparatively fewer settlements but, as is often the case with these regions, it is difficult to judge whether this is so because of less research and investigation or whether the centre of stimulus of this group was more north of the Danube than south of it.

It is evident that the earliest stages (notenkopf Ia) in the development of the "notenkopf" style of decoration occur predominantly in Moravia and south-west Slovakia, as at the sites of Bajč, Hurbanovo, Žopy etc. (Pavúk, 1962, 8; Tichý, 1962, 290-293). It is clear that the "notenkopf" style is a simple development from the decorative styles of the early phase of the culture in this region, since, when it first appears, it consists of patterns of spirals or straight lines similar to those of Žopy etc., but with large round indentations at the end of the lines, or occasionally interrupting them. As described in Part II, Chapter 4, the subsequent development of the style entails an increase in the quantity and proximity of dots along the lines, and a decrease in their size; in the middle phase of the culture in the central region, the indentations tend to retain their round shape.

VIII-XI The patterns made by the "notenkopf" lines in the subsequent stages (notenkopf Ib and II) of the development of the style include spirals with lines which increase in quantity and proximity as the culture develops, and rectilinear patterns consisting not of meanders, but of triangles, zigzags etc., with their angles almost invariably marked by a round dot, and hanging from horizontal lines which are incised round the rim; the lines which define the

rim also tend to increase with the development of the culture, so that in the later part of the middle phase (Phase III) there may be up to three or four parallel lines round the rim, and in the Ukraine, and Moldavia this feature becomes very exaggerated.

The fabric associated with the development of the "notenkopf" style of decoration becomes increasingly finer and harder; a quick disappearance in the method of tempering pottery with straw or chaff is evident at the beginning of the development of the "notenkopf" style, when the fabric is tempered predominantly by fine micaceous inclusions as in the eastern and nuclear provinces; although in these latter areas the development of fine mica-tempered wares had already been developed by the end of the early phase of the culture. The surface of the pottery, at least in the early part of the middle phase in the central province, is smooth and half-polished, giving a good base for the thin lines with V-sections which are incised on it. The colour of the pottery of the middle phase becomes increasingly black or grey/black, although occasionally, especially in the earlier part of the middle phase, firing under oxidising conditions, causing a buff or orange colour occurs.

The forms in the early stages of the development of the "notenkopf" style include especially forms which occurred in association with pottery of the early phase of the culture, especially the simple hemispherical bowls, straight-sided truncated-cone bowls, bi-conical bowls, and bottles with cylindrical or flaring necks, nearly always with flat bases. Gradually, however, the necked-bottles disappear, and the form of the pottery becomes almost standardised into a mixture of the hemispherical bowl and the rounded bi-conical bowl with round bases, which, in the later parts of the middle

phase, eventually evolve into the  $\frac{3}{4}$  spherical and bomb-shaped pots.

At the end of the early part of the middle phase of the Linear Pottery culture in south-west Slovakia (end of II), a local development of the "notenkopf" style is evident in such sites as Hurbanovo and Bajč, where the notes on parallel lines which are close together tend to join up making one indentation across several lines. This local style evolves gradually into the "Zeliezovce" style, which spread rapidly in popularity, appearing in the settlements of the later part of the middle phase of the culture alongside the "notenkopf" style of decoration in south-west Slovakia, west Hungary, and, to a certain extent, north-east Austria; in the later phase of the Linear Pottery culture in these regions, it developed to the exclusion of the "notenkopf" style, and appears only by itself (Phase IV).

In the earliest stages of its development, it is still possible to see traces of the individual "notes" which have been joined into one; soon, however, and in the majority of sites, it is impossible to distinguish individual "notes", since the typical "lens-shaped" indentation of the Zeliezovce style evolved. In the early phase of development of the Zeliezovce style, in the later part of the middle phase of the Linear Pottery culture (Phase III) the patterns are generally made up of bands of two or three parallel lines only, whereas in the Late Phase of the Linear Pottery culture, there may be up to five or six parallel lines in one band. In this middle phase of the culture, the patterns also tend to be predominantly curvilinear, as with the notenkopf style, whereas later, they become predominantly rectilinear.

The Zeliezovce style of decoration only occurs sporadically in Moravia,



in the sites of the later part of the middle phase of the culture (Phase III).

Evidence for the long rectangular surface houses comes from a number of sites of this phase of the Linear Pottery culture in the central province, including Mannsworth in N.E. Austria, Hurbanovo (Bacheroc major), Šarovce and Mohelnice. As mentioned in Part II, Chapter 1, the houses of the central province tend to consist only of the simple plan of five long rows of post-holes without any elaborating features of bedding trenches, etc. However, the house at Hurbanovo, S.W. Slovakia, has a bedding trench all round, and that from Šarovce, also in south-west Slovakia, has a bedding trench round its northern end. The distinctive feature of short bedding trenches parallel to the long walls of four of the houses at Mohelnice has already been discussed in the previous chapter. (Tichy, 1962, 25-254).

There is evidence for the economy of the Linear Pottery settlements of the central province in this middle phase from the animal bone material from Győr and Pomáz (Zdravlyak); both these sites are in north-west Hungary, and their archaeological material is from the later part of the middle phase (Phase III) (Bokonyi, 1959, 50-52). The analysis of the bones from these sites shows that approximately 90% of the total number of bones and individuals are of domesticated animals; of the total number of domestic animal bones, approximately 65% are those of cattle, 12% are from pig, and approximately 15% of sheep/goats. This comparatively high proportion of sheep/goats is similar, although not to such a great degree, to the number in the contemporary settlements of Thuringia in the west-central province; however, it is clear that the dominant domestic animal in the economy of the settlements of this area was cattle, and that pigs and sheep/goats were definitely secondary. Among the wild animals, wild cattle

(aurochs) and wild pig were the most important.

The evidence from the site of Herrnbaumgarten in north-east Austria, which has material from the early part of the middle phase (Phase II) indicates a predominance of domesticated cattle, and pig, with no mention of sheep/goats; but the animal bones from this site have not yet been analysed in detail (Felgenhauer, 1965, 1-21). This site has also produced carbonised grains of emmer and einkorn wheats, as has the site of Mohelnice in north Moravia.

The flint blade industry includes especially blades 2.5-5 cm. long with very little retouching, but often with a glossy area across one corner; if the bulb of percussion is retained, the glossy area is at the opposite end from this, as at Velatice, Nova Vés, Mohelnice etc. There are also longer blades 4-7 cm. long, on which the bulb of percussion is invariably retained and which have steep retouching down one or both edges. Obsidian implements are very rare in the central province of the Linear Pottery culture compared to their occurrence on the sites in the eastern and nuclear regions, which may indicate a certain lack of contact between the settlements of the central province and those of the Slovak uplands where the obsidian deposits occur. Obsidian implements, however, do occur on the settlements of north Moravia, in the Opava gap, which were not far from the deposits in the north Slovak mountains.

Polished stone implements include wide rectangular or slightly trapezoid axe/adzes with a flat rectangular cross-section. The narrower rectangular axe/adzes with a higher plano-convex cross-section also occur frequently on the sites of the middle phase of the culture in the central province, especially on the sites north of the Danube.

Burials are seen on a number of settlements, but without any specific

cemeteries; they consist invariably of crouched inhumations lying on their side, sometimes in shallow pits dug specially for that purpose as at Nagytétény in west Hungary and Eggenburg in north-east Austria, or haphazardly in old building pits, along with the domestic rubbish. Grave-goods occur with the former type of burials, usually consisting of a pot, spondylus shells and occasionally a polished stone axe.

The grave at Nagytétény contained pottery from the later part of the middle phase of the Linear Pottery of the central province (Phase III) in association with contemporary pottery of the eastern province (Phase IV) (Gallus, 1936, b,45-48).

4) Expansion of the culture of the central province to the region north of the Carpathians (Poland, Ukraine, Moldavia and E. Rumania.)

Pottery of the early phase of the Linear Pottery culture of the central province appears sporadically north of the Carpathians, as at Zofipole and Bienczyce in south-east Poland, but the main phase of settlement by the early agriculturalists in this region seems to have been at a period contemporary with the early and later parts of the middle phase of the culture. The pottery of the Polish sites is almost identical to that of Moravia in form, fabric and decoration, consisting of hemispherical or globular bowls with predominantly "notenkopf" decoration. Even the sites lower down the Oder, such as Nosocice, which are comparatively close to the Saxon sites, have material which is related much more to that of the central province than to the west-central province.

The style of decoration which is typical of the early part of the middle phase of the culture in the west-central province, known as "pattern 200" consisting of filled-in bands, is very rare in the Polish sites, occurring for

152:10 example at the site of Bienczce, near Krakow.

149 Similarly, the sites of the upper Vistula, in the Krakow province, have  
 151, material which is identical to that of the central province, although they are  
 152:1-2, much closer in distance to the north Slovak sites of the eastern province.  
 9,11  
 148:1-20 However, sherds of the early phases of the Bük culture (Pre-Classical Bük I  
 150:20-1 and II) do occur sporadically on the sites in association with sherds decorated  
 151:26 in the "notenkopf" style as at Bienczyce, Zofipole, Targowisko, Olzanica etc.  
 152:12, (Kulczycka and Kozlowski, 1960, 45-48). There must have been a certain amount of  
 14-16 contact across the Carpathians in this region, especially via the gap in the  
 mountains made by the upper river Poprad which runs northwards into the  
 Vistula near Krakow; the contact is likely to be connected with obsidian, since  
 obsidian deposits occur in the mountains of north Slovakia, and obsidian  
 implements occur very commonly on the Linear Pottery sites of the Krakow district,  
 especially those which have produced sherds of the "Bük" type. (Kulczycka  
 and Kozlowski, 1960, 49-52).

Although the majority of sherds in the Polish sites are decorated in the  
 "notenkopf" style, these are also associated with sherds of the Zeliezovce type,  
 which is more common in the sites of west Slovakia and west Hungary. There is  
 a tendency for the "notes" on the lines of the Polish sites to be lens-shaped  
 as well as round, but these are quite distinctive from the true imported  
 ✓  
 Zeliezovce sherds which occur in association with material of the later part of  
 148: the middle phase of the culture, as at Boguchwala, in south Poland (Dzieduszycka,  
 2,4,13 1960, 11-21).

The decoration of the pottery from the sites of the Ukraine is also almost  
 exclusively in the "notenkopf" style, and points to the expansion of the Linear



Pottery culture, representing the earliest agriculturalists in this region, from the west. It is logical that this expansion should have been via the upper Dniester, which flows into the Black Sea through the Ukraine, from the northern slopes of the Carpathians; the source of the Dniester is very close to that of the San and the Wislok which flow from the northern slopes of the Carpathians into the Vistula a little lower down than Krakow.

This hypothesis is supported by the similarity of the pottery of the upper Dniester sites to that of the contemporary Polish and Moravian sites, and the gradual disintegration of the patterns of the central province in the sites lower down the Dniester. The decoration of the pottery of such sites as Bovišev and Kotovane consists of single or double lines in predominantly rectilinear patterns interrupted by round or oval dots across the lines. The pot forms consist basically of  $\frac{3}{4}$  spherical or bomb-shaped pots with rounded bottoms. The rims of the pots are decorated by one, two or three parallel lines (Passek and Chernush, 1963, 13-14).

The upper Styr has similar pottery, including a pot from Bayev decorated in a style similar to that of the "early notenkopf" of the central province, and a sherd from Lutsk decorated by double parallel lines crossed by a single lens-shaped indentation, which may represent an import of a Želiezovce sherd from the central province, or may be a locally developed style, although it does not occur again.

The site of Nezvisko, however, which is typical of the Linear Pottery settlements of the more middle course of the Dniester has pottery in which the decorative features of the Linear Pottery culture of the central province have been exaggerated or have disintegrated; on the one hand, the indentations are much

smaller and do not interrupt the lines so much as rest on them; on the other hand, the patterns of the central province which consist of one or two parallel lines are made here by three or four parallel lines, and on one pot the rim is decorated by 10 parallel lines.

153:  
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There is a similar development from the forms, such as the round-bottomed bomb-shaped bowls which are typical of the central province, Poland and the upper Dniester sites. In the middle Dniester and Moldavian sites,

153: these become predominantly flat based, although generally retaining the  $\frac{3}{4}$   
19-21 spherical shape of the body; there is also the frequent addition of a short  
153: wide cylindrical neck.  
16,18,  
22

It is possible that the development of these forms reflects a certain amount of influence from the preceding Cris culture pot-forms of the Prut valley in Moldavia. However, this seems hardly likely since the Cris culture settlements of Moldavia are south of the settlements of the earliest agriculturalists represented by the Linear Pottery culture in the upper middle Dniester valley. Also the pot forms of the Cris culture consist especially of hemispherical bowls with disc bases or low pedestals but not so frequently simple flat bases (Petrescu-Dimbovita, 1959, 53-68). Pottery of the Cris type, though not necessarily accompanied by an agricultural economy, infiltrated as far as the hunting/fishing settlements along the middle Southern Bug valley. Fine pottery of a similar type in fabric, form and, to a certain extent, decoration to that of the Moldavian Cris sites appears in the stratified sites, such as Basilov Ostrov, Mytkiv Ostrov and Sokoletz, in the lowest layer, which represents the early phase of the Southern Bug culture (Danilenko, 1962, 23-27; Passek, 1962, 129; Sulimirski, Prehistoric Russia, in press, 33). The finer pottery is associated with coarse pointed-bottomed pots which must be a local development.

The second phase of the southern Bug culture is represented by material which is stratified above that of the early phase without a hiatus. The pot forms of this phase include simple hemispherical or  $\frac{3}{4}$  spherical bowls with rounded and flat bases decorated by short incised lines, zig-zag lines, comb-impressions etc. These are associated with coarse pointed-based pots decorated in the same way; this middle phase of the Southern Bug culture is associated at the site of Basikov Ostrov on the Bug river with sherds of imported ware decorated in the "notenkopf style" of the central province of the Linear Pottery culture. The quality of the decoration is much more similar to that of the Polish and upper Dniester sites than of the middle Dniester sites such as Nezviska; the indentations are relatively large and oval and cross the line instead of merely touching it. Unfortunately the sherds do not include any bases so that it is not possible to tell whether the sherds of Basikov Ostrov are really related more to the Polish sites. (Passek and Chernush, 1963, 13).

It has been suggested that, just as the technique of the manufacture of pottery seems to have reached the southern Bug settlements from the Cris settlements of Moldavia, the technique was transmitted from the southern Bug settlements to the contemporary fishing/hunting settlements of the Dnieper rapids area and thence up the Dnieper to the settlements of the Taiga forest zone (Sulimirski, Prehistoric Russia, in press, 33-36). How much effect the presence of the agriculturalists represented by the Linear Pottery culture had on the development of the form and decoration of the pottery, and even on the economy of these settlements, is really beyond the scope of this study, since we are concerned here more with the effect of the Linear Pottery cultures on the subsequent developments in south-east Europe.

At this stage, however, one may say that it is unlikely that the development of predominantly flat-bottomed pot-forms in the Linear Pottery of the Dniester is due to any influence from the contemporary pottery styles of the Bug river, or even from the possibly partly contemporary Cris culture of the Prut valley. Similarly, it is not possible to examine in detail any influence that forms of the Linear Pottery might have had on those of the Bug and Dnieper sites, since this would involve a whole new thesis. There has, as yet, been very little analysis of the animal bone material of the middle phase of the Southern Bug culture, so that it is also not possible to tell whether agriculture had entered into the economy of these sites at this time, or whether the introduction of agricultural techniques is associated purely with the expansion of the later Tripolye/Cucuteni culture.

154

The sites of the Linear Pottery culture in the Moldavian SSR situated especially in the valley of the Reut river, have produced pottery of a very similar type to that of Nezviska etc., including patterns made of three or more parallel lines, interrupted or touched by indentations which tend to be triangular or small and oval, rather than round; the patterns are predominantly curvilinear, consisting especially of interlocking curves; this pattern also occurs very commonly in the central province in Moravia, but made by one or, at the most, two lines. The rims are decorated by three to five parallel horizontal lines. The pots are invariably flat-bottomed, and include mostly hemispherical,  $\frac{3}{4}$  spherical or bomb-shaped bowls, which occasionally have short, wide cylindrical necks.

Similar forms and decoration prevail in north-east Rumania (Moldavia) where the sites are especially distributed along the Prut, Jijia and Seret valleys. Since the forms and decoration of the pottery from these sites is identical to



that from the middle Dniester and Reut sites it is unlikely that the settlements in the middle Prut valley represent a separate expansion from the upper Prut; they are more likely the result of an expansion from the Reut valley to the middle Prut, especially since no sites have yet been discovered in the upper Prut valley. From the middle Prut and Seret valleys, the expansion continued southwards to the southern part of Rumanian Moldavia; on one of the sites of this region, Perieni, the Linear Pottery material is stratified in a thin layer without any hiatus above a pit containing material of the Cris culture. (Petrescu-Dimbovita, 1957, 75-76). It indicates that in this area the Cris painted ware is not contemporary with the Linear Pottery culture. It is, nevertheless, possible that in some more isolated sites, the Cris culture without painted ware did continue partly contemporaneously with the settlements of the Linear Pottery culture.

From the lower Siret river, the Linear Pottery culture appears in some recently discovered settlements in Muntenia (south-east Rumania), along the Buzău river to the Ploiești region. As will be discussed in Part IV of these sites, such as Sudiți, have produced material which shows a disintegration of the Linear Pottery "notenkopf" pattern and its transformation into one aspect in the early development of the Boian culture pottery. The patterns, consisting especially of a number of parallel horizontal lines round the rim of the pot interrupted by narrow oval dots, are combined with the fine channelled decoration of the contemporary Dudești culture; (discussion with V. Teodorescu in the Iași Museum in June 1965); this latter culture, as mentioned elsewhere in this chapter, is one of those related to the Vinča-Tordoș culture of Yugoslavia (Comsa, 1962, 58-61).

155 The Linear Pottery with "notenkopf" patterns from central Rumania, especially in the south-east corner of Transilvania is almost certainly the result of an expansion from the Linear Pottery settlements of the lower Siret river in Moldavia, via the gap in the Carpathians made by the watershed of the Olt river, which runs west into Transilvania, and a tributary of the Siret. The sites are distributed, rather sporadically, but mostly on the upper Olt and upper Mures rivers. (Vlassa, 1959, 239-245). The pottery patterns and forms are almost identical to those of Moldavia, consisting of three to five horizontal lines surrounding the rim, and rectilinear and curvilinear patterns, especially interlocking curves, made by two or three parallel lines interrupted or touched by oval or triangular indentations.

70:2 Evidence for surface houses comes from Nezviska on the middle Dniester, possibly Floresti on the Reut, and Glăvănești Vechi on the Prut. These have all been discussed in Part II, Chapter 1, in the section concerning typical houses of the Linear Pottery culture. The only really positive evidence from this region is from Nezviska where two houses were excavated with remains of baked clay floors; House XIII which was better preserved was approximately 12 7 m. with three hearths in the interior; thus the basic shape of the Linear Pottery houses was retained, but the construction used more clay than wood. (Chernush, 1962, 12-13). As with the pottery, it is unlikely that the house type of the middle Dniester sites were at all affected by those of the Moldavian Cris culture, but until there is more evidence for houses from this latter culture, it is impossible to judge.

70:1 The evidence from Floresti in Moldavia and Torskoye on the middle Dniester, and Kotovane on the upper Dniester, is purely negative evidence; the sites consist of a series of long pits which have been interpreted as pit-dwellings; however,

the pits are orientated in the same direction, and the width between them is approximately 8 m.; it is possible, therefore, that houses of the "classic" Linear Pottery construction and dimensions were originally characteristic of the Ukraine and Moldavian Linear Pottery sites, but have not been preserved, and the only traces of them which have been preserved are the long building pits which were originally dug parallel to each long side of the house.

Evidence for the economy of the Linear Pottery sites on the northern edge of the Carpathians comes from Floresti in the Moldavian SSR (Passek and Chernush, 1963, 31-32) and Traian (Dealul Fintinilor) in Rumanian Moldavia (Necrasov and Haimovici, 1962, 262). The bone material from both these sites has been analysed in detail and shows a percentage of approximately 55% for the domestic animal bones, which is rather less than in the more central provinces of the Linear Pottery culture; of these domestic animal bones, approximately 70% are from cattle, 20% from pig; sheep/goats do not appear at Floresti and are very unimportant in Traian. This pattern is quite in agreement with that from the contemporary sites of the central province. However, hunting activities also clearly provided an important supplement for the diet. Among the wild animals red deer were important in both sites; in Floresti wild cattle and wild pig were also important.

In south Poland the flint blade industry of the Linear Pottery sites of the Krakow district consists especially of blades 3-5 cm. long, retouched down one edge; also important were the long wide end scrapers; micro-lithic elements in the blade industry of this area are completely absent although south Poland was comparatively densely populated by mesolithic hunting/fishing communities, as at Grzybowa Gora (Ginter, 1965, 5-33).

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In Central Poland where there was also an important preceding mesolithic population, as in the Poznan district, as mentioned in Part I, Chapter 2, the blade industry of the Linear Pottery sites, such as Chelmzia, does include microlithic elements, for example geometric transverse arrowheads and blunted-back blades (Jazdzewski, 1965, 67).

153: The material from the Ukraine such as Nezviska and Torskoye includes  
1-10 among the flint blade implements especially the same long blades 4-6 cm. long,  
154: with the bulb of percussion retained, and retouching down part of one side,  
but with very little evidence for sickle-gloss; there are also wide end-scrapers similar to those in south Poland.

154 In the Moldavian SSR the flint blade industry of Florești consists of  
63 predominantly the same two groups of implements, but includes four possible  
geometric microlithis. The mesolithic populations with a microlithic blade  
43: industries in the Ukraine, as at Kudlayevka, were generally rather north of  
1-15 the Linear Pottery settlements (Briussov, 1957, 221-222).

68 In the Linear Pottery settlements of Rumanian Moldavia as at Glăvănești,  
Vechi, the long 4-6 cm. blades are much less common, with little regular  
retouching; sickle-gloss occurs on only one of the blades examined. The  
wide end-scrapers, however, were very numerous on these sites, and were one  
of the dominant blade implements.

In all regions of the Linear Pottery culture north of the Carpathians,  
the polished stone industry was dominated by the narrow long rectangular axe/  
151: adzes with a plano-convex grading to a rounded cross-section, known as the  
11 "shoelast" type. The flat trapezoid axe/adzes are very rare in the sites of  
153: this province.  
11

Burials occur in some of the settlements consisting, as usual in the



Linear Pottery settlements, of crouched inhumations without grave goods or any specific burial place; they are buried normally among the houses, in building pits etc. Jazdzewski regards the cremations found in one or two of the settlements of south Poland as belonging to the Linear Pottery culture, and points to analogies in Thuringia (Jazdzewski, 1965,66). However, from all the other evidence studied in these last two chapters this would be unique and seems highly unlikely.

5) The West-Central province (Bohemia, E. Germany (Saxony and Thuringia) and W. Germany (Bavaria) II and III.

The middle phase of the Linear Pottery culture in the west-central province of the Linear Pottery is characterised in Bohemia by a predominance in the pottery decoration of the locally developed "filled-in band" pattern or "pattern 200" in the early part (Phase II) and a predominance of the "late notenkopf" style in the late part (Phase III). In the other regions of the province, the occurrence of "notenkopf" decoration is much less frequent, and the later part of the middle phase tends to be characterised by later developments of the "pattern 200".

Thus, in the early part of the middle phase (Phase II), the west-central settlements were relatively isolated from the trends of development of the central province; the earliest stage in the evolution of the "notenkopf" style (notenkopf Ia) does occur in the Bohemian sites, but sporadically, and it is confined mostly to east Bohemia, as at Novy Bydžov and "site T" at Bylany (Soudský in discussion at Bylany, April, 1965). Similarly, all stages in the development of the early notenkopf style (notenkopf Ib) may

be seen in Bylany, and other sites, but the dominant form of decoration in Phase II in the west-central province is by the "filled-in bands" pattern.

156: The style of decoration which consists of "volutes" made by two parallel  
1-20 lines with stabs and dots in between them, known as "pattern 200" is a development from the so-called "Ackovy style" of decoration which characterised the early phase of the Linear Pottery culture. Thus the essential idea of S-patterns and "volutes" made by two or three parallel lines is retained, but the bands are elaborated by extra decoration between the lines.

At first this supplementary decoration consists of rows of three stabs parallel to the long lines, or regular rows of dots, set fairly wide apart.

Later developments in this style include an increase and an irregular arrangement of the dots and stabs between the lines. In the later part of the middle phase (Phase III) in Saxony, Thuringia and Bavaria, as well as in the western province to a certain extent, the supplementary decoration includes the ladder design of line and stabs at right-angles to the long lines, or a single row of dots in the band.

The patterns associated with the filled-in bands style are rectangular and curvilinear; in the earliest development of the style they are identical to those employed in the decorative styles of the early phase of the culture, especially S-patterns, and confronting spirals; there is a quick development to spiral patterns as well as zig-zags, and, occasionally, meanders.

The fabric of the pottery associated with this decorative form and with the earlier notenkopf decoration is very fine, tempered with micaceous inclusions which are so fine that they may not even be deliberate; this gives the fabric a soft powdery texture, so that the incised lines still tend

to be U-profiled and relatively wide; the colour of this pottery is predominantly a whitish grey towards buff, but the orange of the early phase and the dark grey colour of the later part of the middle phase very rarely occurs.

Occasionally the "filled-in Bands" decorative style is combined with the "notenkopf" style, although this combination occurs more in Saxony and Thuringia than Bohemia. In Bohemia, when the notenkopf style occurs it is much more similar to that of the central province, with the same tendencies towards an increase in quantity and proximity in the "notes" and lines. However, there is a slight local difference in that, except in the earliest "notenkopf" of Bohemia, the indentations have an oval or crescentic shape, rather than the regular round shape of the central province, and tend to be smaller. Also, in the patterns executed in the "notenkopf" style in Bohemia, spirals, rather than interlocking curved lines and hanging triangles, predominate.

The forms of the pottery of the middle phase in the west-central province follow the same trends that are seen in the central province; at the beginning of phase II, forms associated with pottery of the early phase continue, including flat-bottomed hemispherical bowls, and bottles with cylindrical or flaring necks and ribbon lugs and biconical bowls. Gradually however, the bases of the pots become rounded, the  $\frac{3}{4}$  spherical and bomb-shaped pots become dominant, and the bottles, and straight-sided bowls, etc., disappear.

The fabric associated with the "notenkopf" decorated pottery, especially that of the later part of the middle phase (Phase III) is tempered by micaceous inclusions which tend to increase in size so that the surface of the pot becomes grittier; generally, however, this coarse texture is characteristic of the late phase of the Linear Pottery culture in this region; in the

middle phase relatively fine ware is characteristic, with a smooth surface, and a grey/black colour through firing in reducing conditions.

Evidence for surface houses of the middle phase of the culture in the west-central region comes especially from the large site of Bylany where 8 periods of settlement represent the early part of the middle phase (Phase II) and 2 phases of settlement represent the later part of the middle phase. Other sites in Bohemia include Postoloprty, Jažlovič, Stvolínek, Tuchlovič, Tuchomyšl, etc., and in Saxony: Dresden (Nickern and Prohlis) and Zwenkau, and in Bavaria: Herkheim and Nähermemmingen. The details of the evidence from these sites has been discussed in Part II, Chapter 1. The houses consist basically of five long rows of post-holes; this simple plan is often elaborated by a bedding trench at the northern end in all periods of settlement, and a conglomeration of post-holes at the southern end, although this feature is generally confined to the early part of the middle phase of the culture (Soudský, 1962, 198).

The tripartite plan of the houses of the early part of the middle phase of the culture in the western province never appears as a deliberate feature in the settlements of the west-central province.

The preliminary analysis of the animal bone material from Bylany has shown that 90% of the domestic animal bones are of cattle with some pig and very few sheep/goats, although no figures are yet available for the other animals (Analysis done by Clason of the Biolog.-Arch. Institut, Groningen). From a total of 51 sites of this phase in the south part of East Germany, an analysis has been made which shows that 95% of the total number of bones are those of domestic animals (Müller, 1964). Together with the evidence from



the west Hungarian sites, this would point to the almost non-existence of any hunting activities in the more central provinces of the Linear Pottery culture. As mentioned in the previous chapter, there is the unusual feature in the east German sites of a very high proportion of sheep/goats. In this middle phase of the culture, sheep/goats become even more important so that their bones form 40% of the Total, almost as many as those of domestic cattle whose bones form 46.5%; pigs, on the other hand, are quite secondary. Of the wild animals, pig, roe deer and red deer are the most important.

In the middle phase of the culture of the west-central province there is a great development in the flint blade industry, as seen especially in the evidence from Bylany in Bohemia, and Nerkewitz and Dorna in Thuringia (Behm-Blancke, 1963, 107-108). There is especially an increase in the number of blades which have traces of sickle-gloss on them. In the east German sites the majority of implements which have this shiny area are over 3.5 cm. long, with the bulb of percussion very frequently retained, and the sickle-gloss in an area across one corner, or partly down one edge, opposite the end with the bulb of percussion. In Bohemia the sickle-gloss appears equally on blades 2.5-4 cm. and 4-6 cm. long. In addition there are blades with re-touching down one or both edges without sickle-gloss.

The polished stone industry includes rectangular or slightly trapezoid wide axe/adzes with a flat rectangular or low plano-convex cross-section; also narrower long narrower long rectangular axe/adzes with a higher plano-convex cross-section; these latter are more the true "shoelast" axe type. Both types of axe/adzes appear together on most sites, and were obviously the most important working tools. (Vencl, 1960, 1-43).

Burials consisting of crouched inhumations occur, as in the central province, on the settlements in shallow pits accompanied sometimes by pots, spondylus shells or polished axe/adzes, or in former building pits along with the domestic rubbish. (Stekla, 1956, 702-706; Kahlke, 1954). In the middle phase there is no evidence for special cemeteries associated with the settlements.

6) The western province (West Germany, East France, the Low Countries)

II and III.

Settlement by the early agriculturalists in the early phase of the Linear Pottery culture was comparatively sporadic in this region. The middle phase of the culture is marked not only by an increase in the settlements of those areas already populated, such as the central part of west Germany (Hessen) and the southern part of west Germany (Baden-Wurttemberg), but also an expansion of the settlement area to include the lower Rhine valley as far as Dutch Limburg and the regions on the far side of the Rhine in east France (Alsace and Bas Rhin) (Arnal and Burnez, 1958, 59-62), the part of west Germany known as Rheinland, and the low Countries in Belgian and Dutch Limburg (Modderman, Waterbolk et al., 1959, 1-225).

The pottery of the middle phase of the Linear Pottery culture in the western province is characterised by the so-called Flomborn style of decoration and its later developments. (Buttler, 1938, 25). As mentioned in Part II, Chapter 4, this style is essentially a development from the S-patterns made by bands of three parallel lines of the "Ačkovy" style of the early phase of the culture (Soudský, 1954, 95); as with the "filled-in bands" style of "pattern 200", the Flomborn style retains the basic idea of

S-patterns and "volutes" made by two or three parallel lines, and elaborates these by the addition of supplementary designs such as rows of long stabs parallel to the lines and in between them, or short stabs and dots, which tend to increase in number, proximity and irregularity with the development of the style.

The difference between the Flomborn style of the western province and pattern 200 of the west-central province is that, in the former style, the idea of the wide band made by two parallel lines with a third parallel line running down the middle, which is typical of the Ačkovy style, is retained much longer, whereas in the west-central province, the bands very quickly develop into narrower bands made by two parallel lines. In the western province, the pottery of the late phase of the culture is distinguished by the middle line of the band being removed leaving a very wide band which is filled in with dots, etc.

The supplementary decoration in the Flomborn style includes, as well as stabs and dots in rows, narrow oval indentations marking the end of the middle long line of the band, or in between the bands, resembling a local variation of the early "notenkopf" style. In addition to the filled-in bands, spiral and rectilinear patterns occur with lines interrupted by narrow oval indentations in the true "notenkopf" style, but this is more frequent in the later part of the middle phase of the culture in this region (Modderman and Waterbolk's Phase II). In this phase the notenkopf decoration also occurs in combination with filled-in bands decoration. However, the patterns made by the notenkopf decoration of the western province are very rarely the spirals of the west-central province, or the interlocking curves

and hanging triangles and zigzags and horizontal lines round the rim of the central province; it resembles more an attempt to apply the notenkopf idea to the Flomborn bands which were predominantly filled in with stabs and dots, some of which themselves resemble the "notes" of the notenkopf decoration. The S-patterns and volutes are retained in the pottery decoration of the western province, and there is comparatively little decoration by true spirals or rectilinear patterns.

The forms of the pottery in this middle phase of the culture in the western province consist predominantly of the hemispherical or  $\frac{3}{4}$  spherical bowls with rounded bottoms. The tendency towards piriform or bag-shaped bowls does not occur until the late phase of the culture in this region.

There is ample evidence for surface houses from the settlements of the western province, and the details of this have been discussed in Part II, Chapter 1. In the early part of the middle phase of the culture (Waterbolk and Modderman's Phases Ib and IIa), the so-called Geleen type of house was dominant; this is the type where the simple arrangement of five rows of post-holes have been elaborated by a possible tripartite division of the houses into a northern part surrounded by a bedding-trench, a southern part with a conglomeration of postholes marking a raised floor for storage, and a wide space in the middle marked by a Y-configuration of post-holes. (Waterbolk, and Modderman, 1959, 163-166).

The later part of the middle phase and the late phase of the Linear Pottery culture in the western province is distinguished by the predominance of the so-called Elsloo type houses, where the simple plan of five long rows of post-holes is elaborated only by a shorter bedding trench at the northern



end, and rarely by the conglomeration of post-holes at the southern end, or the Y-feature. It is difficult to judge whether a similar chronological division on this basis may be applied to all the settlements of the western province, since there has not been so much comparatively detailed and systematic excavation as in Holland (Waterbolk and Modderman, 1959, 167). It is true that at Müddersheim, where the material is predominantly from the later part of the middle phase and the late phase of the culture, only one of the houses has the tripartite division of the Geleen type (Schietzel, 1965, 11-19).

Evidence for the economy of the settlements of the Linear Pottery culture in the western province occurs very rarely. The most useful so far has been the analysis of the animal bone material from Müddersheim, nr. Köln, which has material from the later part of the middle phase of the culture (Stampfli in Schietzel, 1965, 115-123). From the total number of bones, 71% are of domestic animals, although of the total number of individuals represented, only 53% are domesticated animals, which would indicate an increase in the importance of hunting in the western province at this time. It is possible that this was always so in this outpost of the Linear Pottery culture, but there has been no analysis of the animal bone material of the settlements of the early phase. Of the domestic animals, cattle form 66% of the total number, with pig 20% and sheep/goats 12%. The individual count, however, shows much less cattle (only 40%), and a higher percentage of sheep/goats than pig; this pattern is reminiscent of that of the contemporary settlements of the south part of East Germany (Müller, 1964). The dominant wild animal is wild cattle (aurochs), which might indicate supplementary domestication, as was discussed in Part I, Chapter 2, rather than an increase in hunting.

The flint blade industry of the western province is distinguished by the appearance of symmetrical and asymmetrical triangular arrowheads, with an average length of 3 cm., and of large discoid scrapers; and by the predominance among the implements of long wide end-scrapers. Sickle-gloss occurs generally on blades 5-7 cm. long, as in the west-central province, or even longer; the glossy area is always on the end opposite that with the retained bulb of percussion, in a long narrow area across one corner of the implement. There are also boring implements with steep retouching down both edges. Although microlithic implements, including geometric shapes do occur occasionally on the sites of this region, as at "Müddersheim" and the Dutch sites, they cannot be said to form an important element in the blade industry.

Polished stone implements are dominated, as in the settlements north of the Carpathians, by the long narrow rectangular axe/adzes, with a high plano-convex cross-section, known as the "shoelast axe". The flat trapezoid axe/adzes are much rarer.

Burials occur occasionally in the settlements as at Köln (Lindenthal) and consist exclusively of crouched inhumations lying on their side, in former building pits, along with domestic rubbish, etc.

### Summary

The middle phase of the Linear Pottery culture represents the beginning of regional variation in the pottery forms and decoration, on a basis of the uniform styles of the early phase. In all areas a development in the pottery fabric is visible; chaff-tempering disappears except sometimes in the coarse ware, and the pottery is much finer, tempered by fine mineralogical inclusions,

giving the fabric a smooth hard surface. In the nuclear and eastern provinces the finer ware was already produced at the end of the early phase; whereas in the more western provinces the fabric did not become hard until the end of the middle phase. The pottery was fired in reducing conditions giving it a generally grey/black, grey, or buff colour.

There was a uniform tendency towards the manufacture of  $\frac{3}{4}$  spherical or bomb-shaped bowls with round bases, although in the nuclear and eastern provinces the bases were predominantly flat.

The most obvious regional variation is in the development of the local pottery decoration styles from the uniform styles of the early phase. In the region of the lower Tisza basin rather special conditions of a mixing of the Linear Pottery and Vinča-Tordoš cultures produced a combined incised/burnishing/red-on-matt decoration of the pottery. However, in the Tisza basin, the Alföldi, and the cave and open settlements of the eastern province, the basic method of decoration was by incising. Although the actual designs are different in each of these regions, a basic tendency may be seen towards increasing the number of lines and their proximity in the pattern; the complicated patterns reach their climax in these regions in the late phase of the culture.

In the eastern part of the Alföldi, and the transitional north-eastern part of the Alföldi there was a local development of buff pottery painted in black curvilinear lines which is shown to be direct development from the fine red-slipped ware with black painted rectilinear patterns (Esztar style) of the early phase of the Linear Pottery culture in this region; associated with this is red-on-white painted ware, especially in the eastern part of the

Alföldi. This painted ware also occurs on sites in the western part of Transilvania and Crişana in north-west Rumania, although not in association with incised ware, and occurs eventually in the more central part of Transilvania; this problem will be discussed at greater length in Part IV.

The central province is distinguished by the so-called "notenkopf" style of decoration which, in the later phase of its development, occurs also on the settlements north of the Carpathian mountains in Poland, Ukraine, Moldavia and south-east Transilvania. In the latter two regions the "notenkopf" style of the central province undergoes further regional development in the disintegration and the exaggeration of the patterns. As will be shown in Part IV, the Linear Pottery of Moldavia, had a very important effect on the formation of the decorative styles of the Boian and Pre-Cucuteni cultures.

The west-central and western provinces developed the patterns of the early phase of the Linear Pottery culture in yet another way, by tending to retain the volute idea of the Aĉkovy style, and developing the patterns based on the bands filled in with stabs and dots. In Bohemia, the development of this style was interrupted after the first part of the middle phase by the increasing predominance of the "notenkopf" style of decoration. In the other areas, however, the notenkopf style was always merely a subsidiary method of decoration.

Apart from the pottery decoration, the other aspects of the material culture in the middle phase are comparatively uniform. In the Tisza valley, there tended to be more influence from the traditions of the south-east Europe neolithic cultures, as may be seen in the small nuclear houses found in these areas, and the relatively frequent figurines, clay stamp seals, bone spatulae, etc.



There is very little evidence for surface houses in the nuclear and eastern provinces so that it is difficult, at the moment, to tell if the houses of these regions also reflected influence from the lower Tisza. However, other aspects of the material culture are quite different from those of the lower Tisza, Körös and Vinča cultures.

The "classic" houses of the Linear Pottery culture have already been described in detail in Part II, Chapter 1; they occur in the central, west-central and western provinces, those in the central province tending to be without elaborating features, such as bedding trenches, and those in the west being built with half-raised floors, bedding trenches, and possibly a tripartite arrangement of the house. It is probable that similar houses were built in the settlements north of the Carpathians, in Poland, the Ukraine and Moldavia, but so far the only positive evidence is from Nezviska which shows a house with Linear Pottery dimensions, but with a baked clay floor and very little evidence for post-holes.

The economy, as seen from the animal bone material, shows consistently a predominance of domesticated animals over wild ones. In the central, and west-central provinces these consist of 90% domestic animal bones; and on the Alföldi 75%; but in the Tisza valley the proportion is much more like that of the preceding Körös settlements. In the peripheral regions of the Linear Pottery culture in Moldavia and the western province, the percentage of domestic animal bones is only 50-60%. Of the domestic animal bones, cattle consistently predominate, with domestic pig almost always the secondary domestic animal, except in the western and west-central provinces (Thuringia) where there seems to have been a local importance of sheep/goats.

The flint blade industry is based on the simple blade with shallow retouching, and the bulb of percussion very frequently retained. Sicklegloss tends to occur on the smaller blades, below 3.5 cm., in the nuclear, eastern, and central provinces, whereas in the west-central and especially the western provinces, sicklegloss occurs on increasingly longer blades. In the peripheral districts again, the Ukraine and Moldavia and the western province, there are large numbers of the long wide end-scrapers; and in the western province triangular arrowheads occur. Obsidian from the Slovak mountains indicates contact between this area and the settlements of the nuclear region as far as the lower Tisza, and the south Polish sites and some of the northwest Moravian sites, but very rarely with the sites of the central or west-central provinces.

The polished stone industry is dominated by the wide trapezoid or rectangular axe/adzes with a flat rectangular cross-section, and the narrower longer rectangular axe/adzes with a plano-convex cross-section which becomes increasingly higher with the more western settlements. The former predominate in the settlements of the nuclear and eastern provinces; the two types occur fairly equally in the settlements of the central and west-central provinces, and generally the latter predominate on the sites of the peripheral provinces, that is the Ukraine and Moldavia, and the western province.

Burials are invariably crouched inhumations, with or without grave-goods of pottery, spondylus and polished stone, depending on whether they have been buried in a shallow burial pit, or in former building pits along with the domestic rubbish. Cremations have been claimed for Poland and Thuringia, but burial rites tend to be one of the most conservative and uniform features of the material culture, so that these seem unlikely to belong to the Linear Pottery settlements. Exceptions, however, are always possible.

### Chapter III

#### The later Phase of the Linear Pottery culture.

It is not intended in this study to describe the late phase of the Linear Pottery culture in any great detail, except perhaps in the nuclear region, since, apart from this latter province, this phase of the culture is distinguished by an increase in the isolation and provincialism of the settlements and the formation of many small local groups; in the central and part of the west-central province, there is a noticeable decrease in the innovating energy of the Linear Pottery cultures, and a gradual absorption by the cultures, known as the "Lengyel group". The "Lengyel group" represents an agglomeration of cultures, distributed especially in the northern part of Croatia, west Hungary, north-east Austria and south Moravia; in the "pre-Lengyel" period, they are distinguished especially by the use of painting after firing, but not in combination with incised decoration, and are distributed in the south-west part of Hungary and north Croatia.

The technique of painting after firing in combination with incised lines is a distinguishing feature of the last phase of the Linear Pottery cultures of the eastern part of the central province (Želiezovce II), the eastern province (Late Bükk), and the nuclear province (Tisza II). The technique is thought to represent a general pre-Lengyel horizon in these regions, prior to the expansion to these regions of the painting without incising from the south-west part of Hungary and north Croatia (Lichardus, 1962, 54; Dimitrijević, 1961, 18-22).

The early phase in the evolution of the "Lengyel culture" in north Croatia and south-west Hungary as at Zengővárkony (Dombay, 1960), and its

probable formation on a basis of the Vinča culture, will be discussed in Part IV, Chapter 3.

At the moment, however, it will suffice to say that the Linear Pottery cultures of the central, eastern and nuclear provinces were more engrossed, in this late phase, in internal development (if one may temporarily anthropomorphise a culture), rather than expansion and influence on other cultures. The most important effects of the Linear Pottery cultures were felt in south-east Europe at a time contemporary partly with the middle and with this late phase of development of the cultures, but as a result of the expansion and development in the previous middle phase. For this reason the late phase of the Linear Pottery culture will not be discussed in detail.

In the more western regions, of the Linear Pottery cultures, however, the disintegration of the culture in the late phase resulted in the formation of a whole series of important post-Linear Pottery cultures such as Rossen stichbandkeramik, the Altheim group etc., and possibly a number of cultures in regions peripheral to these which have previously been classed as "western neolithic"; these were thought to be the result of expansion from the Mediterranean area of south Europe, but they may possibly be the result of the expansion of the post-Linear Pottery cultures from the Danube basin. However, to follow this fascinating theme would involve a complete, new thesis, and is rather beyond the scope of this study.

1) The nuclear region (the Alföldi and the Tisza basin) IV

A) The Tisza Basin is exceptional in the late Linear Pottery provinces in being distinguished by increasing uniformity of culture, as a result of the expansion of the pottery forms and decoration typical of the middle Tisza



valley to include part of the transitional region of the north-east part of the Alföldi, and southwards to include the lower Tisza basin as far as the northern part of the Yugoslav Banat and sporadically as far as the Danube. The fabric is very similar to that employed during the middle phase of the culture: hard thin pottery, with fine mineralogical inclusions, but with a rough unslipped surface, and fired a light buff or orange colour. Forms include similar shapes to those used in the middle phase, but with various elaborations; for example, the simple bucket-shaped pots of the middle phase have the additional feature of a turned-out rim, often with a square cross-section. Straight-sided bowls or wide hemispherical bowls are very commonly placed on tall wide cylindrical pedestals, which are quite distinct from those of the Vinča culture in that the pedestals of the latter culture are generally narrow and solid, whereas those of the late Linear Pottery culture of the Tisza basin are always hollow, and often perforated. Alongside these elaborate forms, the simple hemispherical or globular bowls with flat bottoms continue from the middle phase.

Decoration of the pottery continues the tendencies seen at the end of the middle phase towards rectilinear patterns made of incised lines which increase in quantity and proximity, making the meanders more complicated. In the late phase there is a frequent use of red and occasionally yellow paint between the bands of the less complicated patterns, generally those that do not consist of meanders; and white paint is applied in the lines; the paint is always applied after firing, but never in conjunction with a burnished surface. The painting is used especially commonly in the patterns made up of bands filled in with a single line of round indentations.

Evidence for the economy of the settlements with this late Linear

Pottery culture of the Tisza basin, comes from the settlement B at Lebo, near Szeged, in the lower Tisza valley; this settlement was excavated in 1950 by Korek, and produced material of the late phase of the Linear Pottery culture, and the succeeding eneolithic Tiszapolgar culture (Korek, 1958a, 132-155). The analysis of the animal bone material shows a significant decrease in the importance of domestic animals, whose bones form only 36% of the total (Bökönyi, 1959, 47). Of these, cattle predominate with 85% of the total, and pig are relatively unimportant, forming only 12%, with sheep/goats completely absent. Among the wild animals, wild cattle do not predominate over all others as is seen in the contemporary settlements of the Alföldi, but wild pig, cattle, red deer and roe deer are all equally important.

The flint blade industry as seen in the Lebo B and Kőkénydomb material consists basically of the same blades with the bulb of percussion retained, and very little retouching down the edges. There is a gradual increase in the length of the blades; this feature reaches its climax in the blades 15-20 cm. long which are typical of the subsequent Tiszapolgar culture. Besides the flat axe/adzes of wide rectangular or slightly trapezoid shape, there is the first appearance of perforated polished stone axes, as seen in Kőkénydomb (Banner, 1931a, Pl.XL:22,19,23) and Csoka (Banner, 1960, Pl.LI). It is possible that the appearance of this implement is connected with the change in the economy; associated with these is the increase in barbed antler points seen on the sites of the late Linear Pottery culture of the Tisza basin (Banner, 1960, Pl. XLVI).

The anthropomorphic pots, or hollow figurines found together in the house at Kőkénydomb are to be dated to this phase (Banner, 1959, 14-35) as are

the anthropomorphic pots from Szegvár (Tűzkőves) (Csalog, 1959, 7-38). It is also possible that the large figurines from Szegvár (Tűzkőves) are also from this phase, since there are analogies in the "monumental" figurines of the Vinča-Pločnik culture at Predionica, in central Serbia (Galović, 1959, 1-80). A figurine which is very reminiscent of the two sitting figurines from Szegvár has recently been found near Novi Bečej in the Yugoslav Banat (Csalog, 1959, 7-38; Grbić, 1954, 15-18).

Although the Novi Bečej figurine is a stray find, the decoration on the seat, consisting of closed meanders, is reminiscent of the decoration of the pottery of the late phase of the Linear Pottery culture in the Tisza basin, (Tisza II). However, the decoration of figurines does not always follow the same pattern of development as the decoration of pottery, and is not usually a reliable guide to the relationships and relative date of the figurines. Similar meander decoration appears on several of the figurines from the site of Potporanj, near Vršac in the Yugoslav Banat, which has material from the late part of the Vinča-Tordoš culture and the early part of the Vinča-Pločnik culture (Vinča B2-C) (Milleker, 1938, 119-121, Pl. XVI; Garašanin, M., 1951b, 126).

Sporadic sherds of the incised ware typical of the late phase of the Linear Pottery culture occur on sites as far south as the Danube, for instance at the Chotilor cave of Baile Herculane, nr. Turnu-Severin in the south-west of Rumania, where sherds with incised meanders are associated with pottery of the late Vinča-Tordoš culture (Vinča B2) (Nicolaescu-Plopșor, 1957, 53-54; Berciú, 1961a, 41), also at Vinča near Beograd (Garašanin M., 1951b. Pl. 5:8), and Aradac (Kameniti Vinogradi) where pottery decorated with complicated

incised meanders occurs in a similar late Vinča-Tordos/early Vinča-Pločnik context (Garašanin M., 1951a, 70; Karapandžić, 1922, 162).

#### B) The central part of the Alföldi

The development of the pottery decoration in the central part of the Alföldi subsequent to the middle phase of the Linear Pottery culture, is characterised by a disappearance of incising, and a predominance in painted decoration, so that these cultures can hardly be regarded as belonging to the Linear Pottery group, although they are clearly derived from it, especially in other aspects of the material culture besides pottery decoration.

Two local groups can be distinguished in the painted pottery styles of the Alföldi:

1) the Herpaly culture which is distributed especially in the south-eastern part of the Alföldi, near the modern town of Debrecen; this is the region where, in the middle phase of the Linear Pottery culture, there was a tendency for painted decoration to predominate over incised decoration. The pottery of the Herpaly culture is decorated by painting, although sherds with incised and encrusted decoration of the Tisza basin do also occur occasionally. The typical pottery of the Herpaly culture is made of a very fine, thin hard fabric, of a light orange/buff colour; the surface is left matt, given a "self-slip", or a white slip, and painted with dark brown paint; the patterns are almost exclusively rectilinear, consisting of thin parallel lines which interlock, or form herring-bone patterns, and ladder-patterns, or bands filled with cross-hatching etc. The problem of whether these painted designs are a direct development from the painted pottery of the middle phase of the Linear Pottery culture of the Alföldi, or whether they are the result of stimulus



from the "classic" painted pottery of the Petrești culture of Transilvania, will be discussed in Part IV, Chapter 1.

The forms of the Herpaly pottery include wide bowls on tall wide hollow pedestals which are often perforated, sharp-angled biconical bowls which might point to influence from the Petrești culture, straight-sided conical or bucket-shaped pots (Kutzian, 1963, 237, 249, 251; Tompa, 1929, Pl. LIII LIV).

2) the Csőszhalom style or culture is distributed especially in the north-west part of the Alföldi, near the modern town of Nyíregyháza; it is doubtful if this pottery represents more than the sporadic extension of the "Lengyel" group of cultures from the south-west and south-central parts of Hungary, but it is certain that this pottery which occurs most typically at the site of Tiszapolgar (Csőszhalom) had a great effect on the subsequent development of the pottery of the eneolithic Tiszapolgar culture. (Kutzian, 1963). The pottery consists of fine grey ware with a smoothed or burnished surface, and red and white painted patterns applied after firing (Tompa, 1929, Pl. LV:LVI:LVII); the patterns include some which are similar to those of the Herpaly style; the most important patterns are the series of diamonds, cross-hatched or solid, and the meander and zig-zag patterns made by red lines bordered by white.

The forms include wide bowls on tall wide flaring hollow pedestals which are sometimes perforated, as in the Herpaly and Lengyel cultures, and later in the Tiszapolgar culture. There are also the distinctive wide sharp-angled biconical bowls which occur very frequently in the earliest phase of the Lengyel culture, as seen, for instance, in the site of Zengővárkony in south-west Hungary (Dombay, 1960), where they were developed from the similar forms of

the Vinča culture of north Yugoslavia.

The economy associated with these post-Linear pottery sites of the Alföldi is indicated by an analysis of the animal bone material from two of the sites with pottery of the Herpaly type: Berettyő (Széttmarton) and Herpaly (Bókónyi, 1959, 53-55). The analysis shows that 77% of the animal bones are from wild animals, just as in the contemporary Tisza valley site of Lebő B. However, in the Herpaly sites, the great increase in wild animal bones is probably caused not so much by an increase in the importance of hunting in the economy, but by supplementary domestication of native wild cattle, since the majority of wild bones are from aurochs (Bókónyi in discussion in the National Museum, Budapest, in April 1965). Among the domestic animal bones, approximately 60% are from domestic cattle, with pigs as secondary animals, and sheep/goats relatively unimportant.

The fling blade industry shows the beginning of the development of long wide flint blades, as seen at Zsáka (Várdomb) (Roska, 1942b, 54-68), which reaches its climax in the blades of the copper-using Tiszapolgar culture. The blades are retouched down one or both edges, or at one end, and the bulb of percussion is invariably retained; there are also a number of smaller wide end scrapers. Obsidian occurs, but comparatively rarely.

Among the polished stone implements the long narrow rectangular axe/adzes with the thick plano-convex cross-section are very frequent. Perforated axes appear for the first time, as in the contemporary settlements of the Tisza basin.

Burials occur on a large number of sites at this time, both in the central part of the Alföldi, and the Tisza valley (Kutzian, 1963, 410-415). It

appears that the burials are placed more carefully in specific parts of the settlements, instead of haphazardly deposited among the domestic rubbish as was more usual in the earlier phases of the Linear Pottery culture. The burials consist exclusively of contracted inhumations lying on their side, and frequently accompanied by grave-goods, including pottery, spondylus shell objects, and even copper beads, as at Lebő B (Kutzian, 1963, 411).

A stray find of a square-sectioned copper awl was found near the Herpaly settlement at Berettyó, and Herpaly produced a flat copper bracelet similar to that from la Cata in Transilvania (Kutzian, 1963, 333). The sporadic occurrence of copper non-functional objects in the settlements of the post-Linear Pottery settlements of the Alföldi, and the late Linear Pottery settlements of the Tisza valley (Tisza II), and north-west Hungary, as at Neszmély (Želiezovce II), and the early Lengyel culture, as at Zengővárkony, is very similar to the sporadic occurrence of copper in the contemporary settlements of the Boian and Pre-Cucuteni and Petrești cultures. Copper objects, in this phase, were not only a luxury, they were a rarity.

## 2) The Eastern Province V.

The late phase of the Linear Pottery culture in the eastern province is represented by a continuation of the development of the Bükk style of pottery, into the phases known as Classical Bükk II and III (B2 and 3) and Late Bükk(C). (Lichardus, 1962, 47-61; Korek and Patay, 1958). As with the contemporary cultures of the Tisza valley and the Alföldi, the pottery is characterised by a fine thin hard fabric with a burnished dark brown surface, and decorated by incised patterns which were evolved from the preceding patterns of the middle phase of the culture, but show a great increase in the quantity and proximity

of the incised lines; the patterns consist predominantly of thick bands made of up to thirty thin parallel lines forming pointed arches, and generally curvilinear designs. In the late Bükki phase, the thin lines amount to almost excising, and act as a roughened base for holding red or white encrusted paint which is applied after firing.

The forms of the pots include globular pear-shaped bowls, and hemispherical bowls; there are very few of the elaborate forms on high pedestals seen in the nuclear region.

It seems that the settlements of the eastern province were rather more isolated from the contemporary settlements of the nuclear region than in the previous phase, although possible sherds of the Bükki style have occurred as far south as the Mureş river, where they appear in the Turdas-Petrestii layer at Ia Tărtăria (Vlassa, 1963, 488) and possibly at Turdas (Roska, 1941, Pl. XCVI:3).

The Bükki incised style, continuing the trends at the end of the middle phase of the culture, became the dominant style not only over the whole of the eastern province, but over much of the transitional region of the north-eastern part of the Alföldi, such as Bodrogkeresztur, etc. South of the confluence of the rivers Bodrog and Tisza and on the eastern bank of the Tisza, the pottery decoration tended to be dominated by the late Linear Pottery style of the Tisza valley (Tisza II), as at Kenezlő. Thus, on the whole, it would seem that the late Linear Pottery styles of the Tisza valley and the eastern province were contemporary, although it has often been suggested that the Tisza II style lasted longer than the Bükki decoration of the pottery (Lichardus in discussion at Nitra, May 1964).



### 3) The Central Province. IV.

The pottery decoration of the late phase of the Linear Pottery culture of the central province is characterised two distinct trends: the pottery of the settlements of the eastern part of the province is decorated by an evolved form of the "✓Zeliezovce" style, to the exclusion of the "notenkopf" style; this is especially the case in south-west Slovakia, west Hungary, and east Austria. The late ✓Zeliezovce decoration is clearly developed from the ✓Zeliezovce decoration of the middle phase of the Linear Pottery culture, but the bands are made of four or five parallel lines often with red and yellow paint applied in the area between them after firing, and with large lens-shaped indentations interrupting the whole band, as at Horne Lefantovce (Pavuk, 1962, fig. 4: 2,4) or smaller lens-shaped indentations interrupting part of the band, as at Borovce (Kolnik and Pavuk, 1957, fig. 18). The predominance of this evolved form of the ✓Zeliezovce decorative style in the settlements of the Linear Pottery culture at this time has prompted some researchers to suggest that the material of the late Linear Pottery settlements should be interpreted as a separate ✓Zeliezovce culture. (Pavuk, 1962, 17-18). However, the other features of the material culture are clearly uniform throughout the central province, and the predominance of the ✓Zeliezovce style in the eastern part is no more than a local fashion in the decoration of pottery.

In the western part of the central province, especially Moravia, the pottery of the late phase of the Linear Pottery culture is dominated by evolved forms of the "notenkopf" style of decoration where the indentations which interrupt the lines are often no more than narrow cuts or strokes which are placed close together along the lines; the lines themselves are in rectilinear patterns, often forming bands of two or three parallel lines close together. In this

phase the  $\frac{3}{4}$  spherical and bomb-shaped pots tend to become pear-shaped, especially in the more northern part of Moravia where there were closer connections to the late Linear Pottery developments of Bohemia.

In the south part of Moravia, the painted decoration after firing which often occurs on the same sites as the Linear Pottery culture, and has more or less the same distribution pattern in the loess lowlands, is more typical of the post-Linear cultures related to the Lengyel group of south-west Hungary. However, as in the Želiezovce style of the eastern part of the province, painting after firing already occurs sporadically in the pottery of the late Linear Pottery settlements.

The typical houses of the Lengyel and related cultures in this region is the long trapezoid shaped house, as seen also in the post-Linear Pottery cultures of Bohemia, Poland etc. However, there is no evidence for trapezoid houses in the settlements of the late phase of the Linear Pottery culture in the central province; as was mentioned in Part II, Chapter 1, there is little evidence for surface houses in the Linear Pottery settlements of the central province, and this is predominantly from the middle phase of the culture.

For evidence for the economy of the late phase of the Linear Pottery culture in the central province, it is possible to turn again to the animal bone material from Győr (Papai várnagy) which has material from this phase as well as the middle phase of the culture, although the analysis was made from all the bones together (Bókonyi, 1959, 50-52). The analysis showed that approximately 90% of the total number of bones were those of domestic animals; of these approximately 65% were of cattle, with pig and sheep/goats equally important as the secondary animals. The relatively high proportion of wild animals was caused by the large

numbers of wild cattle (aurochs), other wild animals, except perhaps wild pig, being almost negligible.

The flint blade implements found in association with late Želiezovce and latest notenkopf pottery, as at Borovce in south-west Slovakia, show a high proportion of long blades, up to 8 or 9 cm. long. These have comparatively little retouching and almost invariably have the bulb of percussion retained (Kolník and Pavúk, 1957, fig.4; fig.17; 280-282).

The polished stone industry is dominated by the long rectangular narrow axe/adzes with a high plano-convex cross-profile. The flat axe/adzes do occur, but much less frequently.

#### 4) The west-central province IV.

In the settlements of the late phase of the Linear Pottery culture in the west-central province it is possible to see a continuation in the development of the pottery from the trends of the middle phase. Thus, the pottery of Bohemia is related more to the contemporary development of the "latest" "notenkopf" style of Moravia, whereas the pottery of the sites of Saxony and Thuringia is related more to the contemporary development in the western province.

Thus the decoration of the pottery of the late phase of the Linear Pottery culture in Bohemia is dominated by evolved forms of the notenkopf style where the indentations interrupting the lines are no more than strokes, and are placed so close together on the lines, that eventually it is difficult to distinguish the solid line; this stage is the beginning of the development of the so-called stroke-ornamented ware (stichbandkeramik). The patterns made by the lines include the same examples as in the middle phase, especially spirals, as well as

triangles, zig-zags etc., although these are not as frequent as in the central province; as in Moravia, the lines of the late Linear Pottery patterns are arranged closer together, so that the spirals may be formed by five or six lines instead of two or three.

In the Prague district, in the north-central part of Bohemia, a variant of the "latest notenkopf" decoration may be seen in the Sarka style of decoration, which combines the incised notenkopf designs, with spirals and hanging triangles which are painted in dark brown/black on a lighter burnished surface. The painted patterns are not combined with the incised designs in the same way as the combined decoration of the early phase of the Linear Pottery in the eastern and nuclear provinces or of the late phase of the Tisza basin (Tisza II) and eastern part of the central province (Želiezovce II), where the painted patterns serve to elaborate and emphasise the incised designs; the painted patterns of the Sarka ware are designed in spite of or without regard for the incised patterns (Vencl, 1961b, 93-140).

The pottery of the southern part of East Germany (Saxony and Thuringia) is closely related to the late Linear pottery of the western province and that of Bohemia. The "latest notenkopf" style appears in the decoration, although this is only rarely combined with Sarka-type painting as at Dresden (Baumann, 1965, 66-67); there is also decoration by an evolved form of the "filled-in bands" style, typical of the western province in this phase, where the central solid line has disappeared leaving a very wide band filled in with a large number of stabs and dots which are usually arranged quite haphazardly.

The forms of the pottery associated with the decoration of this late phase consist especially of piriform pots in various stages of evolution from



the globular and  $\frac{3}{4}$  spherical pots of the middle phase. The pots of this phase are also consistently round-bottomed.

The houses of the late phase of the Linear Pottery culture may be seen in the three brown phases at Bylany (Soudský, 1962, 193, 197-198). The houses are the same form as those of the middle phase, consisting of a basic construction with five rows of post-holes, but bedding trenches are absent after the first period of settlement in the late phase, and the conglomeration of post-holes is absent altogether. Additional evidence comes from Zwenkau (Harth) (Quitta, 1958, 177-9).

There is evidence at Bylany for a climatic change during the late phase of the Linear Pottery culture in this region, marked by an increase in rainfall, although whether this affected the economy is impossible to judge at the moment since there is very little evidence available from the animal bone material from this phase. The analysis of the animal bones from the east German sites is predominantly from those of the early and middle phase, and those of the pre-stichbandkeramik phase are included with the latter. (Müller, 1964).

The polished stone industry of the late phase is dominated by the long narrow rectangular axe/adzes with a high plano-convex cross-section, although the shorter wider flat axe/adzes do occur on the settlements in association with these (Vencl, 1960, 23-31).

Burials in the late phase as seen at Praha (Vokovice), continue the tradition of crouched inhumations among the pits of the settlements (Stekla, 1956, 704, fig. 274).

#### 5) The Western Province IV.

The pottery of the late phase of the Linear Pottery in the western province

as seen in Waterbolk and Modderman's Phase III, is decorated in similar ways to the pottery in Saxony and Thuringia, except that, as in the middle phase, decoration in the "notenkopf" style is very infrequent. The principal form of decoration, as seen in the pottery from Elsloo (Modderman 1959, 27-31) and Sittard (Modderman, 1959, 85-97), Müddersheim (Schietzel, 1965, Pl. 35-38,41), etc., is by wide bands made of two parallel incised lines filled with small dots which are arranged haphazardly or in closely-packed rows; patterns include predominantly zig-zags and opposed spirals; similar patterns made by bands of four or five parallel lines also occur; there is also the occasional appearance in this phase of bands of dots and strokes without the confining solid lines, although this pattern is more typical of the post-Linear Pottery culture known as the Stichbandkeramik culture.

The forms of the pots, as in the west-central province, evolve from the  $\frac{3}{4}$  spherical and globular bowls into S-profiled pear-shaped or bag-shaped bowls, which are typical also of the succeeding post-Linear Pottery cultures in these regions.

The surface houses of the late Linear Pottery settlements of the western province, as seen in Müddersheim and Elsloo, are of the type referred to by Waterbolk and Modderman (1959, 167) as the Elsloo type; the house plan consists of the basic five long rows of post-holes, but elaborate features such as the conglomeration of post-holes at the southern end and the Y-configuration of post-holes in the middle, which are thought to indicate a tripartite arrangement of the interior, do not occur at all in the houses of the late phase; also the bedding-trench at the northern end is very much shorter in the Elsloo houses, or is absent altogether, as in the contemporary houses at Bylany.

Evidence for the economy of the settlements in this phase may again be found at Müddersheim, nr. Köln, where the material is from the end of the middle phase and the late phase of the Linear Pottery culture. The analysis of the animal bone material of Müddersheim showed that approximately 70% of the bones were from domestic animals, although these only represented 53% of the total number of individual animals, which may indicate a relative importance of hunting, except that the majority of wild animal bones are those of cattle (aurochs). Among the domestic animal bones, those of cattle predominate, with pig and sheep/goats more or less equal as the secondary domestic animals (Stampfli in Schietzel, 115-123). The relative importance of sheep/goats in this and the west part of the west-central province has been discussed in the previous chapter, and Part I, Chapter 3.

The flint blade industry, as seen at Elsloo and Müddersheim, continues the trends seen at the end of the middle phase of the culture, in the increase of long blades, up to 5 or 6 cm. long, with retouching down part of one edge, and sickle-gloss in a large area across one corner, opposite the end with the retained bulb of percussion. Other typical features in the blade industry include the long wide end-scrapers, long blades with sharp retouching down both edges and shaped into a boring implement, and triangular arrowheads.

The polished stone industry includes especially the long, narrow rectangular axe/adzes with a very thick plano-convex cross-section, and the wider rectangular or slightly trapezoid axe/adzes with a flat rectangular or slightly plano-convex cross-section (Schietzel, 1965, Pl. 5-6).

### Summary.

There is no evidence for a further expansion of the settlement area of

the Linear Pottery culture in the late phase of its development, nor of an increase of population in the areas already settled. In general the regional variations in the pottery decoration occur in the same provinces as those of the middle phase, although the western part of the west-central province has more affinities with the western province, and the western part of the central province (Moravia) has more affinities with the west-central province (Bohemia); the eastern part of the central province forms a separate regional variation, known as the Želiezovce style. The eastern province and the northern part of the Alföldi are dominated by a uniform pottery style represented by the later "classic" phase of the Bükk style.

In the nuclear province, the whole Tisza valley, as far as the Bükk settlements is dominated by a distinct uniform regional decorative style known as Tisza II. The central part of the Alföldi no longer looks towards the Tisza and the eastern province, but may be regarded possibly as a peripheral region of the area of the Transilvanian Petrești culture, which is characterised by painted brown on light orange decoration which may also be seen in the Herpály culture of the eastern part of the Alföldi.

It is possible that a decline in the use of obsidian, which is evident in the sites of the central Alföldi at this time, may be partly responsible for, or the result of, a loss of contact between the eastern and nuclear provinces in the late phase of the Linear Pottery settlements.

As mentioned in Part II, Chapter 4, the pottery of the late phase is characterised by a disintegration of the patterns of the middle phase, caused by an increase in the number and proximity of the incised lines in the nuclear, eastern and central provinces, and an increasing complication in the patterns;



in the central and more western provinces, there is an increase in the number and proximity of the indentations interrupting the lines in the latest stage in the evolution of the "notenkopf" style, and a decrease in their size and a tendency for them to be merely a simple stroke; a similar increase in the number of dots and strokes filling the bands and a widening of the bands may be seen in the latest stage in the evolution of the "filled-in bands" style. The final disintegration of these last two styles is marked by the disappearance of the solid lines in the patterns so that only the rows and bands of strokes and dots remain.

In the eastern part of the central province, the eastern province and the Tisza basin, painting in red, yellow and white applied after firing is frequently combined with the incised patterns.

The surface houses, as seen in the central and more western provinces show the same house-plan as in the middle phase, with a basic plan of five long rows of post-holes; the bedding trenches at the northern end are much less frequent in the late phase, and the conglomeration of post-holes at the southern end is absent altogether.

There is no evidence for the economy specifically of this late phase of the culture, but the same trends as were seen at the end of the middle phase continue.

The flint blade implements show a significant increase in the length of the blades, with little retouching, and with the bulb of percussion invariably retained. The long blades reach their climax in the succeeding post-Linear Pottery culture, especially the Lengyel and Tiszapolgar groups.

The polished stone industry is dominated by the long narrow rectangular axe/adzes with a high plano-convex cross-section, although the flat wider rectangular or slightly trapezoid axe/adzes also occur. In the Tisza basin it is possible in the sites of the late Linear Pottery culture, to see the first appearance of simple perforated axes.

Burials continue the Linear Pottery culture tradition of exclusively crouched inhumations lying on their side, in pits among the houses, or in specific burial places, although these latter only occur rarely. Grave-goods consist of pottery, shell objects, and polished stone implements.

## PART IV

### The influence and effect of the Linear Pottery Cultures of Temperate Europe on the later neo- lithic cultures of south-east Europe.

<u>Chapter I</u> The Alföldi Linear Pottery and the Transilvanian painted pottery	392
1) The Criș culture of Transilvania	393
2) The Turdaș culture of Transilvania	395
The "tablets" of Ia Tărtăria	400
3) The Turdaș-Petrești phase in Transilvania	403
4) The Petrești culture of Transilvania	408
5) Theories of the origin of painted ware in Transilvania	413
6) Petrești and Dimini	420
Summary	425
<u>Chapter II</u> The Moldavian Linear Pottery and Boian/Pre-Cucuteni	427
1) The Dudești and related cultures	427
2) The initial stage of Boian/Pre-Cucuteni	437
3) Second stage of the Boian/Pre-Cucuteni culture	444
4) Subsequent development of the Boian culture	452
5) Proto-Gumelnița/Proto-Cucuteni	455
6) Development of the Cucuteni/Tripolye culture	461
A) Pre-Cucuteni III/Tripolye A	
B) Cucuteni A/Tripolye B 1	466
Summary	472
<u>Chapter III</u> North Yugoslav/south Hungarian Linear Pottery and the Bosnian and Croatian neolithic cultures	477
East Bosnia	
1) Early west Yugoslav neolithic	478
A) Impressed ware	478
B) Danilo culture	479
C) Kakanj	
2) Later neolithic west Yugoslav cultures	489
A) Vinča-Pločnik of north-east Bosnia	
B) Bapsko-Lengyel culture of east Croatia	490
C) Butmir culture of central Bosnia	492
D) Danilo III, Lisičići, and Hvar of west Bosnia and the Adriatic coast	496
Summary	499



## Introduction

The purpose of this part is to follow the subsequent development of the Linear Pottery cultures in the regions of south-east Europe where contact and admixture with other strong innovating cultures, particularly those of the Vinča-Tordoş group, was so great that one may speak of new cultures developing on a basis of these two groups rather than a late development or late expansion of the Linear Pottery culture only. A similar phenomenon is seen in the Szakalhat-Lebő group of the lower Tisza, but as with this group, it is possible also in these later mixed cultures to see the two separate elements quite clearly in the early stages of their development.

There are three main cultures of south-east Europe whose material is caused partly by the direct influence of the Linear Pottery culture in its middle phase. Two of these cultures, the Butmir culture of west Yugoslavia, and the Turdaş-Petrestî (and eventually the Petrestî) culture of Transilvania developed in areas which have no evidence for settlement by communities with the Linear Pottery culture; the third culture, the Boian/Pre-Cucuteni group of Moldavia and Muntenia represents more a disintergration of the Linear Pottery culture and its admixture with the Dudeşti culture. Thus the Linear Pottery culture contributed by indirect influence to the formation of the first two cultures, and by direct influence to the formation of the last-named culture.

## Chapter I.

## Chapter I

### The influence of the middle phase of the Linear Pottery culture of the Alföldi on the painted pottery of Transilvania.

There is a great controversy raging as to the origin of the painted pottery of the later neolithic cultures of Transilvania, and therefore as to the factors which contributed to the development of the Petrești culture. The Petrești culture itself has been recognised for many years, chiefly under the name of the "Central Transilvanian Painted Ware" (Schroller, 1933, 25-30). However, the earlier developments in the culture have only recently been distinguished as a result of systematic excavations at the stratified sites of La Tărtăria (Vlassa, 1963, 485-494) Lumea Nouă (Berciu D. and I., 1948, 1-18) and Poiana în Pisc (Paul, 1960, 107) etc.; it is also recognised as a result of this that the Petrești culture is not only slightly earlier than the painted ware of the "Ariusd" group of the Cucuteni culture, but that it must have contributed to the introduction of painted ware to the Cucuteni group of cultures (Dumitrescu V., 1958a, 35-58; 1964a, 1-40).

Thus an understanding of the elements which contributed to the formation of the Petrești culture and its earlier phases is vital in tracing the development of the copper-using cultures of south-east Europe. There are two hypotheses which have been proposed for the origin of the painted pottery in Transilvania and the evolution of the Petrești culture; both theories are quite incompatible.

/Before

Before discussing these theories, and a possible compromise, it would be as well to describe generally the earlier neolithic communities in Transilvania, and the material culture of the early stages in the development of the Petrești culture.

1) The Cris culture in Transilvania.

MAP<sup>S</sup>  
II  
and  
III

As was mentioned in Part I, Chapter I, there are at least 32 settlements of the Cris culture in Transilvania, distributed mostly between the Mures and Cris rivers. The material culture is related more to that of the contemporary settlements of the lower Olt in Oltenia and the Rumanian Banat (south-west Rumania) than with the material of the Kőrös culture of south-east Hungary. (Vlassa: Cris culture in Transil. (in press).

The settlements are predominantly flat sites by rivers, although occasional cave-settlements do occur. The pottery is predominantly chaff-tempered, buff, with a smooth surface which is decorated by finger-and-nail-impressions in regular rows. There is very little of the applied barbotine decoration of the Hungarian Kőrös culture; the fine plain ware also occurs; the dominant form of these two groups includes, for the coarse ware, globular pots with cylindrical necks, and sometimes ribbon lugs, and, for the finer ware, hemispherical bowls, with disc bases or low pedestals.

These same forms of the fine plain ware also serve for the fine painted ware, although this is a very rare form of decoration as in the Hungarian Kőrös culture. As was described in detail in Part I, Chapter I, there are three Cris sites in

/Transilvania

Transilvania which have produced painted pottery:

Bidescutul Mare, reg. Mureş (unpublished in Cluj Museum).

Gura Baciului, reg. Cluj (unpublished in Cluj Museum).

11-13 Let (Varhegy), reg. Brasov on the upper Olt. (Nestor, 1957, 59; Zaharia, 1962, 5-51).

The first two sites produced only one or two sherds, but Let is quite unique in having produced at least 69 sherds. All the painted sherds are red-slipped and painted in black, white or white and black together, in predominantly rectilinear patterns. Although there are three stratified Criş layers at Let, painted sherds of all types occur in all the layers (Zaharia, 1962, 36-38).

At Let there are also the foundations of a small rectangular house, built presumably of daub on a light wooden framework. There is no evidence for the economy of the sites of the Transilvanian Criş culture, since no animal bone or plant material from this region has yet been analysed. Evidence from Verbiţa in Oltenia, however, shows that hunting was almost negligible, although fishing was important; but the basis of the economy was agriculture and stock-breeding, especially sheep goats, and to a certain extent, cattle and pigs (Comşa, 1959c, 173-184).

50 As mentioned in Part I, Chapter 2, the blade industry of the Transilvanian Criş culture includes flint and obsidian implements, especially long blades with retouched points and the bulb of percussion retained, and smaller blades 3-4 cm. long with sickle-gloss across one corner.

The polished stone implements include long rectangular or slightly trapezoid axe/adzes with a flat rounded rectangular /cross-section,



cross-section, as are seen in Let<sub>3</sub> (Zaharia, 1962, 14-16) and other sites, such as Gura Baciului in Cluj Museum.

Burials are invariably crouched inhumations lying on their right or left side, and buried among houses or rubbish pits generally without grave goods, as at Sf. Gheorghe (Bedehaza), Let<sub>3</sub> and Cipău (Comşa, 1960b, 84-86), and more recently, at Gura Baciului (Vlassa and Palko, 1965, 13-17).

There is evidence that in some isolated places, such as the foothills of the Carpathians at Iernut reg. Luduş, and Balomir, nr. La Tărtăria (unpublished in Cluj museum) settlements with simple rusticated ware, which may have been derived from Criş communities, existed at a time contemporary with the copper-using Petreşti culture, since a copper awl with a square cross-section has been found at Balomir, and copper slag at Iernut, in association with Criş type rusticated ware.

It is unlikely, however, that the Criş culture at Let<sub>3</sub> or others in the centre and south-east of Transilvania lasted much longer than a period contemporary with the early phase of the boian culture; at Let<sub>3</sub>, for example, a pit with pottery of an early Boian/Pre-Cucuteni phase has recently been discovered dug into the Criş culture layer (unpublished in Sf. Gheorghe Museum); however, this will be discussed in more detail in Chapter 2.

## 2) The Turdaş culture of Transilvania.

The Turdaş material is found much more frequently in the lowest layers of the large stratified sites of Transilvania, such as La Tărtăria, than is in small open sites as in the Criş culture. This would indicate in the first place that the

/economy

economy of the communities with the Turdaș material was rather more stable and based on a higher production of food than the Criș culture, and that their culture was sufficiently innovating to stimulate the development of a series of important pottery styles; although, as will be discussed below, stimulus of these also came from other sources.

The site after which the culture is named, Turdaș, was one of these large stratified sites, and from analogies with more recently excavated settlements, the Turdaș culture material must originally have been stratified in the lowest layer. As Vlassa points out, the site was excavated with little regard for the stratification, and the excavator was not helped by the great erosion of the site by the Mureș river (Vlassa, 1963, 485).

However, since, these excavations, a large number of stratified sites have been excavated, always with a thin layer with material of the Turdaș culture at the bottom. From the very close affinities between the material of the Turdaș culture and that of the Vinča-Tordoș (Turdaș) culture of Serbia, Oltenia, and the Rumanian Banat, it is clear that the Transilvanian material represents an expansion of the Vinča group, probably via the Mureș river rather than the Olt, since the majority of Turdaș sites are in the vicinity of the former river.

The pottery consists, as in more central areas of the Vinča culture, of three basic groups: (a) the coarse thick ware, not always predominantly chaff-tempered; decorated with finger-and-nail-impressions and other forms of rustication, such as running the fingers across the pot when it was wet.

/ (b)

(b) the slightly finer although still comparatively thick ware, generally mica-tempered, with a smooth surface on which are incised the typical "winkelband" or filled-in band motifs, especially in rectilinear designs. The forms of this fabric include globular pots with flat or disc bases and sometimes narrow cylindrical necks.

(c) the fine black or grey ware, grading to buff, tempered with fine mineralogical inclusions, has a smooth burnished surface which is decorated especially by fine fluted rectilinear patterns on the upper part of the pot, or the whole pot is undecorated. In the Turdaş culture this fine ware is not as frequent as in the more central areas of the Vinča culture, and is more commonly undecorated. The principal forms for which this fabric is employed are the sharply-angled bi-conical bowls with lugs at the angle, and the same form on a high narrow flaring pedestal.

Vlassa has suggested that the Turdaş material of Transylvania is contemporary with the earliest Vinča material of Yugoslavia (Vinča A); this hypothesis is based partly on the fact that the coarse Turdaş pottery is decorated in a way similar to the decoration of Cris pottery, although, as mentioned frequently in previous chapters, coarse rusticated kitchen ware is a very conservative element of the material culture, and is not the best criterion to use in judging the relative date, origins and relationships of a culture. Also, the settlements of the Cris culture are most frequently exclusive of those of the Turdaş culture. The hypothesis is also based on the fact that sherds

/of the

of the early phase of the Linear Pottery culture of the Alföldi (Phase Ib/II) have been excavated from the Turdaş layer at La Tărtăria; these consist of simply patterns made by wide incised lines, similar to the finds at Turdaş (which have no stratigraphical context) and at Ciumeşti (Vlassa, 1963, 486; Roska, 1941, Pl. CXI: 2-4; Pl. CXIII: 12,19; Comşa, 1963, 477-483).

At the top of the Turdaş layer at La Tărtăria, however, sherds with incised decoration, similar to that of the middle phase of the Linear Pottery culture in south-east Hungary, as at Dévaványa, and Gorzsa, were found in association with simple triangular-faced figurines of the Vinča-Turdaş culture (Vlassa, 1963, 486; Korek, 1961, 9-24; Gazdapusztai, 1963, 21-46). These were also excavated at Turdaş, although their association and stratigraphical position was not marked (Roska, 1941, CVIII: 1,3; CIX:6; CX:1,5-6,8,13-16; CXXXVII; CXXXVIII; CXXXIX).

Thus it would seem that layer I at La Tărtăria, representing the Turdaş culture in Transylvania is roughly contemporary with the early part of the Vinča-Tordoş culture of Yugoslavia and the Rumanian Banat: Vinča A-B1. It should be pointed out here that there is no evidence from any of the Turdaş settlements of Transylvania for painted ware, unless the red-slipped ware of occasional pedestalled bowls are regarded as such.

Other aspects of the material culture of the Turdaş culture in Transylvania, besides the pottery, are poorly documented, although they are likely to be similar to those of the Vinča-Tordoş culture (A B1) in the Banat area (Garasanin M., 1951a, 18-50, 82-88).



Evidence for surface houses has not been recognised, or is missing. Pits containing charcoal and domestic rubbish have been interpreted as pit-dwellings at La Tărtăria (Vlassa, 1963, 486) and Nandruval (Roska, 1941, 15-16).

No animal bone material from this layer in any of these settlements has been analysed in detail, so there is also no positive evidence for the economy of the Turdaş culture.

The flint blade industry includes blades especially 3.5 - 5 cm. long with shallow retouching down part of one edge, and, less frequently, long end scrapers. Obsidian occurs as small blades and scrapers but infrequently compared with flint. Polished stone implements include especially the long rectangular narrow axe/adzes with a rounded plano-convex cross-profile; the wider rectangular or slightly trapezoid axe/adzes with a flat rectangular cross-profile do occur on most sites, but in rather smaller quantities.

The majority of the large number of clay female figurines from Turdaş must, on typological grounds and from analogies in the lowest layer at La Tărtăria and the Vinča-Tordoş sites in the Banat, be associated with material of the Turdaş culture (Roska, 1941, Pl.CXXXVII: 12-16; CXXXVIII: 1-11; CXXXIX: 1-21; CXL: 3,5,8,9,12). Similar examples were excavated from the "ritual pit" which was dug into the Turdaş layer at La Tărtăria (Vlassa, 1963, fig.6), and from the Turdaş layer at Lumea Noua near Alba Iulia (Berciu, D. and I., 1948, 1-18; figurines unpublished in Alba Iulia Museum). The Turdaş figurines consist predominantly, as with the Linear Pottery culture figurines, of poor provincial versions of the figurines of the Vinča-Tordoş /culture

culture of the Banat area. Whereas the body of the figurines of the former culture are generally flat, those of the Turdaş culture have a simple cylindrical body with a flat-topped triangular-faced head, with the eyes incised and the nose represented in relief.

Turdaş has also produced other objects which reflect the traditions of the south-east European neolithic cultures in the material of the Turdaş culture, including bone spatulae of a similar shape to those of the Vinča-Tordoş culture (Roska, 1941, Pl.LXV: 11-13; LXVI: 1-24; LXVII: 1-3, 9, 18-21), although it is possible that these, like the figurines, and the "winkelband" decorative style survive long into the later phases of these settlements. Other objects include three-cornered clay vessels with straight sides, which have been interpreted as lamps (Roska, 1941, Pl.XCVIII), clay "stamp-seals" (Roska, 1941, Pl.CI: 2, 12, 16; CXXIX: 23;), cat-faced lids (Roska, 1941, Pl.CII: 1-20; CIII: 1-21), clay ladles (Roska, 1941, Pl.CV), perforated clay "weights", especially the pear-shaped type, as well as an evolved form of the "tomato-shaped" type (Roska, 1941, Pl.CXXV; CXXVI; CXXVII; CXXVIII: 1-7; 9; 11-22), clay "spindle-whorls" (Roska, 1941, CXXVIII: 8, 10; CXXIX: 1-9).

It is necessary to mention the evidence for what has been claimed as writing, at least, contact with forms of writing in the Near East, from the clay tablets found in the "ritual-pit" at La Tărtăria (Vlassa, 1962, 23-30; 1963, 490-494). It is claimed that the incised lines on the tablets resemble the  
/writings

writing on the tablets from Uruk-Warka IV and Djemdet Nasr, and one specialist in pre-Hittite Luvean has even claimed that he can read the tablets, although not understand them. If the tablets are to be related to those from Uruk-Warka, which have C-14 dates of  $3450 \pm 360$  b.c. at the earliest, even allowing for a certain amount of time lapse before they were deposited in the "ritual pit", they cannot be dated before approximately 3500 b.c. This would cause a great inconsistency between the date for the Turdaş layer at La Tărtăria given by the C 14 date for Vinča A/B1 at Vinča -  $4240 \pm 60$  b.c. (GRN 1546) and by supporting evidence from Karanovo for the analogous south Bulgarian Veselinova culture -  $4410 \pm 100$  b.c. (Bln 158), and the dates given by the hypothetical analogies for the tablets.

There are several factors which might cause the inconsistency:

- (a) The Carbon 14 dates from south-east Europe and the Near East (if one accepts the first set, one must accept the other) are incorrect in their relative and their absolute value.
- (b) The tablets are not necessarily related to those from Uruk-Warka.
- (c) The tablets are not associated with material of the Vinča-Turdaş layer at La Tărtăria.

The answer probably lies somewhere between the latter two possibilities. The "ritual pit" containing 26 clay figurines of a type seen not only in the Turdaş layer, but also surviving in the upper layers, 2 alabaster figurines with analogies in the Hamangia culture (Berciu D., 1960d, 433) and Maritsa culture layer at Azmak in south Bulgaria (Georgiev, 1965, 6-8), and the three

/clay

clay tablets, was not dug into the loess from the Turdas layer, but near the area of the Turdas settlement, so that it is not necessarily associated with the Turdas culture settlement.

As Vlassa, himself, admits, it is quite possible that the pit is to be associated with the settlement layer containing material at the transition from the Turdas-Petrestî culture to the Petrestî culture (layer II/III transition), especially since the clay figurines of the type found in the pit also occur in this phase, and the alabaster figurines have analogies in cultures contemporary to this phase, and pieces of baked clay and pot-bottoms with single inscriptions similar to some of those on the tablets from the pits, occur at the top of layer II and bottom of layer III (Vlassa in discussion at Cluj Museum, May 1965).

If the pit and the tablets are to be associated with this phase, at the beginning of the development of the Petrestî culture, they would also be contemporary with the main part of the Hamangia culture (Cl4 3930  $\pm$  70 b.c. GRN 1986), the Maritsa culture - Karanovo V (average date from Azmak: 3810  $\pm$  128 b.c. Radiocarbon VIII, 1966), and the beginning of the Vinča-Pločnik culture in Serbia- Vinča C (Banjica = Vinča C/D: 3760  $\pm$  90 b.c. GRN 1542). There is, therefore, still an inconsistency with the dates provided by the analogies with tablets at Uruk-Warka; however, there are a number of dates from the same layer at Uruk which are much later than that of 3450  $\pm$  360 b.c., and it is possible that the Uruk dates themselves may be treated with scepticism; it is equally possible, that there is no relation between the Uruk or Djemdet Nasr tablets and those from

/La Tartaria



La Tărtăria; there are numerous examples from Turdaş as well as La Tărtăria of pieces of clay and pot-bases containing single signs which need not necessarily imply writing, although they may quite easily be interpreted as symbols (Roska, 1941, Pl. CXXXI-CXXXVI); in the same way the tablets which contain the same symbols but in groups may be local development of representation by symbols, although the technique never developed past the initial stage.

### 3) The Turdaş-Petrestî Phase in Transilvania.

MAP  
V

On the majority of Turdaş settlements the evolution of the culture continued with the addition of stimulus from other cultures. The basic groups of pottery of coarse rusticated ware, thick relatively coarse ware with a "self-slip" and incised decoration in "winkelband" patterns, and fine burnished ware in sharply-angled biconical bowls with fine fluting or undecorated, continued in the settlements, but the addition of new elements, especially the appearance of painted ware, but also of pottery decorated in the style of the Boian/Pre-Cucuteni cultures from the other side of the Carpathians, marks the Turdaş-Petrestî phase and the beginning of the development of the Petrestî culture.

The painted decoration of the Turdaş-Petrestî phase occurs especially in the more central and western Transilvanian settlements. It is executed exclusively on the fine ware, although the surface of the painted sherds is not always burnished.

A form of painting occurs at the bottom of the Turdaş-Petrestî layer which consists more of an orange or red burnished slip

/than deliberate

than deliberate painted patterns. The true painted ware of the  
 159:4, Turdaş-Petreşti layer, is distinguished especially by a white slip  
 13-14 which is decorated by red-painted curvilinear and sometimes recti-  
 160: 1-3, linear patterns; black-painted patterns on a brick-red slip also  
 5-8 occur, as well as brown/red-painted patterns on orange; there are  
 159:5-6 also trichrome patterns consisting of brown/red and white on an  
 159:1-3 orange ground, and red bordered by black on white. Thus the  
 159:7-11 painting shows a great variety in the colour of the ground, the  
 patterns, and the colour of the paint. It will be discussed in  
 a later section of this chapter whether the traditions of an  
 occasional coloured slip in the Turdaş pottery can be held res-  
 ponsible for the sudden development of these varied painted  
 patterns.

The forms of the painted ware are at the same as those of the  
 fine burnished ware, including especially sharply angled and  
 rounded biconical bowls, but, in the Turdaş-Petreşti phase, these  
 are very rarely on the high pedestals typical of the Turdaş  
 culture.

The Turdaş-Petreşti layer in the stratified settlements was  
 first recognised in the site of Lumea Nouă, near Alba Iulia,  
 where its material formed the second layer; thus it has often  
 been referred to as the Lumea Nouă aspect of the Petreşti culture  
 (Berciu D. and I., 1948, 8-11; Berciu D., 1961a, 23-25), although  
 the term "Turdaş-Petreşti" conveys more the idea of the initial  
 stage in the evolution of the Petreşti culture which the phase  
 represents.

As mentioned above, the painted pottery of this phase occurs  
 especially in the central part of Transilvania, in the upper  
 /valleys

valleys of the Mureş, and Criş, rivers. In the south-eastern part of Transilvania, where the occurrence of the Turdaş material is not so common, the material contemporary with the Turdaş-Petrestî phase is rather mixed, incorporating especially material of the earliest phases of the Boian/Pre-Cucuteni cultures (I and II) which were developed more east and south of the Carpathians and will be discussed in Chapter 2. At the site of Poiana în Pisc, near Caşolţ, on the upper Olt river, brown-red on orange painted ware of the Turdaş-Petrestî type occurred in association with sherds decorated with incised patterns in the Boian/Pre-Cucuteni I/II style (Paul, 1960, 111-112).

Higher up the Olt river, in the south-east corner of Transilvania, in the district of Sf. Gheorghe and Braşov, painted pottery never occurs in association with the incised Boian/Pre-Cucuteni I/II material at Let (material unpublished in Sf. Gheorghe Museum), etc.

In west Transilvania, on the other hand, as was discussed in Part III, Chapter 2, there are a number of sites on the middle course of the Criş Repede, which are roughly contemporary with the Turdaş-Petrestî layers of the central Transilvanian sites, which have produced painted pottery of a similar mixed character to that in the latter area; for example Deventului cave and Porolissum near Aleşd. The painted pottery of these sites is not associated with incised pottery of the Turdaş "winkel-band" style, or of the intrusive Boian/Pre-Cucuteni style (Vlassa, 1961, 17-25).

Thus, in Transilvania, it is possible to see three local regions where the influences from different cultures is felt to /a varying

a varying degree, producing a series of roughly contemporary mixed local groups rather than separate cultures. In west Transilvania, especially along the Criş Repede, are sites with painted ware which represent the extension of the settlements with painted ware of the middle phase of the Linear Pottery culture of the Alföldi. In Central Transilvania, especially along the Mureş river, are sites with the Turdaş-Petreşti material which was formed on a basis of the Turdaş culture from the Banat region, but with the addition of certain external elements as seen in the painted ware; in the region between the Mureş and the Olt, in south Transilvania, around the modern towns of Sebeş and Sibiu, there is often a strong element of the Boian/Pre-Cucuteni I/II cultures in this Turdaş-Petreşti material. Finally, in the upper Olt valley, painted pottery hardly occurs at this stage, nor does the incised "winkelband" pottery of Turdaş tradition; the pottery of the Braşov and Sf. Gheorghe districts is dominated by the incised ware of the earliest phases of the Boian/Pre-Cucuteni style.

Evidence for surface houses of the Turdaş-Petreşti culture comes from La Tărtăria, where surface structures with floors of wood covered by baked clay have been excavated. It is difficult to distinguish whether these are the true ploščadki floors, which are typical of the Cucuteni and Tripolye settlements, and occur also in the succeeding Petreşti culture in Transilvania. If these floors of the Turdaş-Petreşti layer at La Tărtăria were real ploščadki floors, with a solid wooden layer covered by clay which was then baked, they would represent the earliest instance of this method of construction. However, it is more likely that

/they represent



they represent the rudimentary wattle and daub floors, similar to those seen in the Linear Pottery settlement of Nezviska in the Ukraine, and later in the Pre-Cucuteni settlements of Moldavia. (Chernush, 1962, 12-13).

None of the animal bone material of the Turdaş-Petrestî settlements of Transilvania has yet been analysed to give an indication of the economy of the earliest stage in the development of the Petrestî culture.

The blade industry includes implements of flint and obsidian, but very few of either type. The blades are generally 3.5 - 5 cm. long, with the bulb of percussion retained, and retouching down one or both edges. Polished stone implements include the wide rectangular or slightly trapezoid axe/adzes with a flat rectangular or slightly plano-convex cross-section, generally 7 - 9 cm. long; in association with these, on all the sites, there are the longer rectangular axe/adzes with a thick rounded plano-convex cross-section, generally 9 - 11 cm. long.

158: Features of the Turdaş culture such as clay figurines with  
5-7 a cylindrical body and flat-topped triangular-faced head and those with perforated arms survive into this phase, and it is probable that those found in the "ritual pit" at La Tărtăria, along with the clay tablets and alabaster figurines belong to the end of this earliest phase of the Petrestî culture, as was discussed in the previous section. Other features include evolved forms of the pear-shaped and "tomato-shaped" clay weights and clay "spindle whorls".

From the many sherds of the Boian/Pre-Cucuteni I/II cultures  
/found

found in association with painted ware of the Turdaş-Petrestî type, and from the fact that these latter cultures, as will be discussed in the following chapter, are derived from the Dudeşti culture which is roughly contemporary with Vinča A/B1, and the contemporary middle phase of the Linear Pottery culture, it would seem that the Turdaş-Petrestî phase of Transilvania is roughly contemporary with the late part of the Vinča-Tordoş culture (Vinča B2) and the earliest part of the Vinča-Pločnik culture (Vinča C1), and generally with the transition from the middle to the late phase of the Linear Pottery culture on the Alföldi.

#### 4) The Petrestî culture of Transilvania.

MAP  
VI

The Petrestî culture, representing the climax in the development of the painted ware and other aspects of the material culture of Transilvania is distributed not only on the large stratified sites, such as La Tărtăria and Lumea Nouă, but also on new sites founded by the communities with the Petrestî culture, thus representing an increase in the population and settlement area, seen at this time throughout south-east Europe.

The Petrestî culture appears on the stratified sites in the layers immediately above those with the Turdaş-Petrestî material. The pottery of the Petrestî culture retains the three groups of pottery, except that the two coarser groups tend to merge and become a uniform group of coarse pottery: thick with a smooth self-slipped surface, buff colour, decorated by slightly evolved forms of the incised "winkelband" patterns which still survive in the coarse kitchen ware from the Turdaş culture.

The fine pottery is hard, thin, and tempered with fine

/mineralogical

mineralogical inclusions; the colour of the fabric is a light buff colour, with a light orange burnished surface; the varying backgrounds of the painted pottery of the Turdaş-Petreşti phase, including the white-slipped ware disappeared, as did the varying colour of the paint. Thus the painted ware of the "classic Petreşti" culture tends to be a uniform light orange ware painted in black/brown curvilinear and rectilinear designs.

XII:23

The patterns are made especially by bands of thin parallel lines bordered on each side by thicker lines, in a very similar way to the painted pottery of the middle phase of the Linear Pottery of the Alföldi. Other designs include cross-hatching or simple thin parallel lines, very reminiscent of the designs on the Herpály pottery of the Alföldi. Patterns include a rich variety of spirals, meanders, diamonds, etc.

The very typical form of the Petreşti painted ware is evolved from the simple sharply-angled biconical bowls with lugs at the angle which was characteristic of the fine ware of the Turdaş and Turdaş-Petreşti phases; by the time of the Petreşti culture this form has become exaggerated into a wide bowl with a sophisticated sharply-carinated or closed-S profile, although the simple Turdaş form does still occur. Other forms include wide bowls on tall hollow flaring pedestals, similar to those of the Herpály and Tiszapolgár and Lengyel cultures. At Pianul de Jos, near Sibiu, a baked clay platform was excavated containing a wide typical Petreşti bowl still resting in situ on top of a tall cylindrical hollow stand; both were painted, but with quite different patterns (Iuliu Paul in discussion at Sibiu Museum in

/May 1965.

May 1965.

Evidence for surface houses in the Petrești culture comes from a number of sites including Poiana în Pisc nr. Casolt, La Tărtăria, Pianul de Jos etc. In this development phase of the culture, true ploščadki floors appear, of the type which occur also in the Cucuteni/Tripolye and Gumelnița culture; it seems probable, however, that this form of construction of the house floors appears first in the Petrești culture. As will be shown below, part of the Petrești culture must be contemporary to the Cucuteni A/Tripolye B 1 and early Gumelnița cultures, but the earlier part of the "classic" phase of the culture is contemporary more with the late Boian/Pre-Cucuteni. It is difficult to distinguish, except by stratigraphy, whether the ploščadki floors of the Petrești settlements are earlier or contemporary with those east of the Carpathians. The houses at Poiana în Pisc are rectangular; House no.2, which is better preserved is 8 x 6 m. in area, with a hearth place on the ploščadki platform (Paul, 1960, 109).

Evidence for the economy of the Petrești settlements, is provided by the animal bone material from Ocna Sibiului, near Sibiu (Paul, 1962, 195-196); the analysis is not yet complete, but so far it is possible to tell that, among the domestic animals, cattle predominated, then pig, with a few sheep/goats.

The flint blade industry continues the traditions of the initial phases of the culture with an increase in long wide blades, with the bulb of percussion retained. A similar tendency was seen in the late Linear Pottery cultures of the

/Alfoldi



Alföldi (Tisza II). The polished stone implements include especially the long narrow rectangular axe/adzes with a thick rounded, square or plano-convex cross-section. A similar increase in the importance of bone and antler tools, especially picks, to that of the Gumelnița and Tripolye/Cucuteni cultures is apparent in the material culture of the Petrești culture.

Figurines continue to be manufactured in the "classic" phase of the Petrești culture, but their shape consisting of a flat body with pointed arms, large buttocks and undifferentiated legs, and head with a pinched-out nose, is much more reminiscent of the Cucuteni/Tripolye and Gumelnița cultures, than the Turdaș-Petrești examples.

Another feature of the material culture of the Petrești culture which is reminiscent of the Gumelnița and Cucuteni/Tripolye cultures is the sporadic occurrence of copper, although, as with the figurines, the occurrence of copper is much more frequent in the latter cultures. So far only two sites of the Petrești culture have produced copper objects: Noslac, near Cluj, where two round-sectioned copper pins with scroll heads were found in association with a painted Petrești sherd and a figurine (discussion with M. Rușu in Cluj Museum, May 1965).

La Cata, near Sibiu, where ploščadki floors were excavated, a flat copper bracelet was found (Vlassa, 1963, 488 n.7).

Considering the relatively slightly earlier date of the Petrești culture, the scarcity of copper objects is not surprising. The end of the Boian culture, which must be contemporary with the first part of the "classic" phase of the

/Petrești

Petrești culture has produced only two copper objects: two small beads from Cernica, near București (Cantacuzino and Morintz 1963, fig.28: 18,19). The so-called proto-Gumelnița site of Hîrsova in the Dobruđa has produced 5 square-sectioned copper pins and 4 copper finger rings (Galbenu, 1963, fig.4). The large-scale production of copper objects, including implements, is limited to the fully developed Cucuteni A/Tripolye B1 and Gumelnița cultures which were rather later than the Petrești culture.

Burials of the Petrești culture, as at Ocna Sibiului, consist of crouched inhumations lying on their side, without any grave-goods or specific burial place (Paul, 1962, 196).

The settlements of the Petrești culture contain much fewer sherds from other cultures, such as the Boian/Pre-Cucuteni group, so that it is more difficult to see the relative chronological position of the "classic" phase of the Petrești culture. A sherd of what has been described as Boian-Giulești (II) has been found in association with Petrești painted ware at Ocna Sibiului (Paul, 1962, 194); firstly, however, it has been admitted that the stratigraphy at Ocna Sibiului is very weakly defined; secondly, the sherds referred to as Boian Giulești are much more reminiscent of the Pre-Cucuteni III material of Moldavia, as at Izvoare 12 (Vulpe, 1957, 57-102) which has also produced sporadic objects of copper (Vulpe, 1957, 110).

From the close relations with the Alódi Herpaly material on the one hand (cf. C 14 3895 60 b.c. GRN 1993: Csoszhalom), and the earliest Cucuteni/Tripolye painted ware and Gumelnița culture on the other, it would seem that the development of the

/Petrești

Petrestî culture took place at a time before the end of the Herpaly and Boian/Pre-Cucuteni cultures, and lasted partly contemporary with the early Cucuteni/Tripolye and Gumelnîţa cultures.

5) Theories concerning the origin of the Transilvanian painted pottery.

As mentioned above, there are two main theories concerning the early development of painted pottery in Transilvania, both of which are quite incompatible.

The first has been put forward mostly by Dumitru Berciu on a basis of his excavations at Lumea Nouă (Berciu D. and I., 1948, 1-18; Berciu D., 1961a, 23-27); he sees the Petrestî culture as a simple development in the large stratified sites, from the Criş culture (although, as mentioned above, the distribution of these latter sites is quite different from that of the large stratified sites) with extra stimulus from the Turdaş culture; he regards these large stratified sites as "citadels" of the Turdaş "overlords" who formed a minority compared with the "peasants" in the flat settlements whose culture was based purely on the Criş culture. During the "classic" phase of the Petrestî culture, the painted pottery, and other aspects of the material culture which had previously been confined to the minority population of the stratified sites spread to the "peasant settlements", and appear, as at Noşlac, as the fully developed Petrestî culture over purely Criş culture layers. (Unpublished; material in Cluj Museum). Berciu's theory is that the painted ware, seen in the Turdaş-Petrestî layer of the stratified settlements, represents a survival of the tradition of

/painting

painting pottery from the Criş culture, which was transmitted via the Turdaş culture to reappear and flourish in the Turdaş-Petrestî and Petrestî phases.

There are three main objections to this theory; firstly painted ware appears in only three of the Transilvanian Criş culture settlements, as mentioned in Part I, Chapter 1, and at the beginning of this chapter; and on two of these sites there are only one or two sherds; indeed, of the 100 sites of the Criş culture in the whole of Rumania, only 10 have produced painted pottery.

Secondly, there can be no question of direct continuation between the painted ware of the Criş culture and that of the Turdaş-Petrestî phase of the stratified sites, since, in Moldavia, at Perieni, painted pottery of the Criş culture almost identical to that from Let in south-east Transilvania has been excavated from a pit which is stratified below a layer containing material of the middle phase of the Linear Pottery culture (Petrescu-Dîmboviţa, 1957, 65-82). As mentioned above, the Turdaş-Petrestî phase of Transilvania may be synchronised roughly with the end of the Vinča-Tordoş culture and the beginning of the Vinča-Pločnik culture (Vinča B2/C1), and the middle phase of the Linear Pottery culture, even in Rumania must be contemporary to the later part of the Vinča-Tordoş culture (Vinča B1/B2), which would indicate that the painted pottery of the Criş culture of Moldavia, and of south-east Transilvania is contemporary at the latest with the beginning of the Vinča-Turdaş culture and the

/end of the



end of the Starčevo culture in Yugoslavia and the Banat (Vinča A/Starčevo IV).

Berciu combats this objection by the fact that the technique of painted pottery is transmitted in the material of the Turdas culture, which is roughly contemporary with the first part of the Vinča-Tordoș culture (Vinča A/B 1). However, there is a third objection to the theory, which is that painted pottery does not occur in the decoration of the pottery of the Turdas culture. There are certainly examples of pots made of the fine fabric which have been given an applied slip, usually a red or brown colour, on the bottom part of biconical bowls and the pedestalled bowls. These also occur fairly frequently on the sites of the Vinča-Tordoș culture of the Banat region and Serbia, but they cannot be said to constitute true painted decoration, and it seems unlikely that they served as the basis of the survival of the Criș-style decoration or the development of the later Turdas-Petrestî painted decoration without any external stimulus.

It is admitted by Berciu that, as yet, there is very little evidence for painted decoration in the settlements of the Criș culture, but it is expected that in future years an increasing number will be excavated.

The second theory has been put forward especially by Iuliu Paul on the basis of his recent excavations in the Sibiu district, especially at Poiana în Pisc and Pianul de Jos (Discussion with Iuliu Paul in Sibiu Museum in May 1965). His theory is based on the suggestion that the main development of painted pottery and other features typical of the "classic" phase of the

/Petrestî culture

Petreşti culture took place on small sites quite exclusively of the large stratified sites, and that the painted ware of the Turdaş-Petreşti layers of these latter settlements represents basically a late Turdaş culture with elements from sites with an early Petreşti culture which are, as yet, undiscovered. Thus the appearance of the "classic" Petreşti painted pottery represents not a development on the stratified sites and then an expansion to the "peasant" settlements of the surrounding countryside, but an expansion of the painted pottery and other features of the material culture of the Petreşti culture to the large stratified sites after they had been developed in the small unstratified settlements. As proof of the existence of the small unstratified sites with intermediate stages in the development of the Petreşti painted pottery, Paul indicates the recently excavated settlement of Mihaltz which has produced trichrome painted ware, red and black on a white slip, similar to the sherds from the Turdaş-Petreşti layer at Ocna Sibiului (Paul, 1962, 193-203).

However, it seems unlikely that evidence for the existence of sites with the hypothetical earliest phase in the development of the painted pottery of the Petreşti culture will be discovered, if there is not yet any positive indication.

Thus the theories of Berciu and Paul are based on the hypothetical existence of sites "which have yet to be discovered". It would seem more constructive to base theories for the development of the painted pottery of Transilvania on evidence which is already extant, and to be prepared to change the theories should

/the existence

the existence of the hypothetical "early Petrești" sites be proved.

Vlassa has tended to look at the material available and form his theories from that. He regards the stratified sites, such as La Tărtăria, as the major scene in the development of the Petrești culture, as Berciu does; however, although he follows Berciu in believing that the technique of applying a coloured slip to some of the fine Turdaș pottery was important in the development of the Turdaș-Petrești and Petrești painted ware, he is dubious about the theory of survival of the tradition of painted pottery and the painted patterns from the preceding Criș painted pottery (Vlassa, 1963, 487; and discussion with Vlassa in Cluj Museum in May 1965).

In a previous study of the painted ware of the western part of Transilvania, which he regarded as related closely to the "Tisza" painted ware, he accepts the possibility that there may be some genetic connection between the Transilvanian "Tisza" painted pottery and the painted ware of the "Turdaș-Petrești" phase of the Petrești culture, and that the former exerted some influence on the patterns of the Petrești painted ware. (Vlassa, 1961, 22). The "Tisza" painted ware referred to in this case is synonymous with the painted pottery of the middle phase of the Linear Pottery culture of the Alföldi as described in Part III, Chapter 2.

It has been one of the purposes of this study to show that this painted pottery of the Alföldi played a major part in the development of the painted pottery of Transilvania, and in this way, the Petrești culture represents a mixture of elements of

/the Vinča-Turdaș

the Vinča-Turdaş culture and of the Linear Pottery culture of the Alföldi. In the Alföldi, there is no problem of finding prototypes for the painted patterns or early stages in the development of the painted ware, since painted ware, first black on red, and then black/brown on buff is associated with the incised ware of the Linear Pottery settlements from the earliest appearance of the culture, beginning with direct prototypes in the painted ware of the Körös and Starčevo-Körös cultures. It is only in the Alföldi, in fact, that the tradition of painting pottery before firing survived so long, since the Linear Pottery culture was "strong" enough to resist absorption by the Vinča and related cultures whose fine pottery was dominated by channelled, and burnished decoration or was not decorated.

At a time contemporary with the Turdaş and part of the Turdaş-Petreşti phases in the stratified settlements, the pottery of the eastern and north-eastern parts of the Alföldi was decorated especially by black or dark brown painted curvilinear patterns on a smooth buff ground; associated with this pottery, especially in the eastern part of the Alföldi were sherds of white slipped pottery, painted in similar patterns in red. The patterns consisted especially in bands of thin parallel lines bordered by thicker lines. In the south-east corner of the Alföldi, along the northern basin of the Criş river, the painted pottery tends to predominate over incised pottery, often to the exclusion of the latter; pottery of this type is seen in western Transilvania, along the Criş valley in such sites as

/Deventului



121: Deventulului and Porolissum almost as far as Cluj, as Vultureni  
10-17 (Vlassa, 1961, 17-25).

It seems possible that some of the painted patterns seen in the Turdaş-Petreşti culture could be derived from the applied slip used in the Turdaş culture, especially those patterns which utilise large blocks of colour; similarly many of the pot forms are derived from those of the Turdaş fine ware, especially those with a sharp-engled biconical profile with a lug at the angle. However, the majority of the painted patterns, especially those consisting of bands of parallel lines, which predominate in the painted patterns of the Turdaş-Petreşti and Petreşti pottery, are certainly derived from the patterns which had been developed on the Alföldi, originally from Starčevo/Körös prototypes. It seems possible that some of the pot-forms associated with the painted pottery, especially the rounded biconical pots are also derived from those of the Alföldi.

One last point concerns the relationship between the Herpály culture of the eastern part of the Alföldi, and the Petreşti painted ware. The hard thin quality of the fabric of both styles of pottery is very similar, as is the light orange colour, and the dark brown painted patterns. The forms of the Herpály painted ware include especially wide bowls on high hollow pedestals which occur also in the painted ware of the "classic" Petreşti culture. However, the sophisticated, sharply carinated bowl which is evolved from the Turdaş biconical bowls, and which is typical of the Petreşti painted ware does not occur in the Herpály settlements.

The Carbon 14 date from Csöszháalom, which is considered to be contemporary with Herpály in being just pre-Tiszapolgár, although it is characterised by painted decoration after firing, is  $3895 \pm 60$  b.c. (GRN 1993). (Kutzian, 1963, 333). This Carbon 14 date synchronises with that from the Maritsa culture of south Bulgaria (Azmak: av.  $3810 \pm 128$  b.c.) which is considered to be contemporary with the later part of the Boian culture (Comşa, 1962, 62-64), and with the dates which represent the middle of the Vinča-Pločnik culture (Vinča C/D) (e.g. Vinča  $3895 \pm 160$  b.c. GRN 1537; Banjica  $3760 \pm 90$  b.c. GRN 1542). It would seem, therefore, that the Herpály culture is contemporary with the transition to the "classic" phase of the Petreşti culture, and with the first part of that culture, after which it was absorbed by the copper-using Tiszapolgár culture.

It is difficult to judge whether the Herpály culture, whose distribution is much smaller than the earlier painted ware of the middle phase of the Linear Pottery culture of the Alföldi, represents an independent development from the preceding Alföldi painted ware, which then exerted further influence on the Transilvanian painted ware in the "classic" phase of the Petreşti culture; or whether it represents a western extension or outpost of the "classic" Petreşti painted pottery which had now developed into a strong innovating culture.

6) Theories concerning the relationships between the painted ware of the Transilvanian Petreşti culture and the Dimini culture of Thessaly.

The principal exponent of the theory that the appearance of  
/the painted

the painted ware of the Dimini style in the late neolithic settlements of Thessaly was caused by a "migration" from the area of the Transilvanian Petrești culture and the late neolithic settlements of the Alföldi has been the Austrian professor Schachermeyer, who has made a detailed study of the pottery patterns and forms of both areas, although he has somewhat neglected the other aspects of the material culture (Schachermeyer, 1954; 1955).

The idea of a simple migration from the Danube area to Thessaly has been opposed originally by Childe (1929b, 338-350), but more recently by Dumitrescu and M. Garašanin, the former on the grounds that the Dimini painted pottery is anterior to the Petrești painted ware, which cannot, therefore have contributed to its formation, and the latter on the grounds that there is not enough archaeological evidence, besides the similarity of certain painted patterns, to support a theory of migration (Dumitrescu V., 1958a, 35-58; 1960b, 189-200; Garašanin M., 1952, 27-38; 1954a, 1-11).

Dumitrescu's objections are based principally on the fact that, on a basis of Milošević's excavations in Thessaly, the material of the Dimini culture has been shown to be before the development of the Vinča culture, or at least not later than the very beginning of Vinča. (Dumitrescu V., 1960b, 198-199; Milošević, 1949a, 37; 1955, 157-182; 1959b, 36-55; 1959a, 9).

On the other hand the painted ware of the Transilvanian Petrești culture, as was shown above, is contemporary with last part of the Vinča-Tordoș culture and the beginning of the Vinča-Pločnik culture, and possibly even later (Vinča B2-C-?D).

/However, it has

However, it has recently been shown that, in fact, the stratigraphy at Otzaki magula in Thessaly is exceptional, or has even been misinterpreted, and that it is much more typical in the tell settlements of Thessaly to find material including black burnished sharp-angled biconical pots of the Larissa culture stratified above the early neolithic Sesklo material, and below the painted pottery of Dimini type (Holmberg, 1964, 343-348). The nearest analogies of the Larissa material are in the late chalcolithic cultures of Anatolia, as at Can Hassan (French, 1961, 99; 1964, 125), and the early Vinča-Tordoš culture of Serbia, and related cultures in south Bulgaria, and the lower Danube valley (Garašanin M., 1951a, 18-50; Georgiev, 1961, 65-71; Comşa, 1962, 58-61). Thus, it seems likely that the Dimini painted pottery is not only contemporary with the late part of the Vinča-Tordoš and Vinča-Pločnik cultures of Yugoslavia, but also with the painted ware of the Transilvanian Petreşti culture.

The real objection to a "migration", as Garašanin points out, is not so much a chronological one, since chronologically it would be possible, but the fact that by whatever route the migrants would have taken, they would have had to pass through areas which were populated by communities with pottery of styles quite distinct from that of the Petreşti and Dimini cultures; the pottery of the intermediate regions is distinguished chiefly by the fact that it is not painted, for example, in the Vinča-Pločnik culture, and, in general the late neolithic and early eneolithic cultures of south-west Rumania and north-west Bulgaria, /or it is painted



or it is painted in a different style as in the Gumelnița culture. Also, the other aspects of the material culture of the Dimini and Petrești cultures cannot be considered similar enough to support a theory of migration from one to the other. (Garašanin M., 1952, 29-30).

Other features of the material culture of the Dimini culture, in fact, including the occurrence of copper, the two-roomed "megaron" house, the figurines, etc. are much closer to those of the lower Danube and south Bulgarian Gumelnița culture as seen in layer VI at Karanovo (Georgiev, 1961, 73-86). It is interesting, in this context that in 1958 a possible imported sherd of Gumelnița/Cucuteni A type was found in the Dimini layer at Otzaki (Milojčić, 1959b, 36-55). It is not suggested that the Dimini painted ware represents a "migration" from the area of the Gumelnița culture, since there are many features of the pottery of the latter culture, such as the predominance of graphite painting, which are quite different from those of the Dimini culture.

It seems probable that the Dimini culture of Thessaly is not the result of any migration, but is an independant evolution similar to the development of painted pottery, sophisticated forms, the manufacture of copper objects, and increase in figurines which occurs in the tell settlements of much of south-east Europe in this period; the phenomena associated with the increase in settlements and development in the material culture is likely also to be connected with an increase in food production and a development of agricultural techniques although there is no direct proof of this.

/However, this still

However, this still does not solve the problem of the origin of the painted pottery of the Dimini culture. Between the area of the south Bulgarian Gumelnița culture and the Dimini culture, there is a series of recently excavated settlements in Greek Thrace and Macedonia which have produced painted pottery, large "megaron" houses, figurines, house-models etc; these features have analogies on the one hand in the Gumelnița culture, and on the other in the Dimini culture. The pot forms of the fine burnished ware include especially sophisticated wide carinated bowls. Examples of these settlements include Akropotamos in eastern Greek Macedonia (Mylonas, 1941, 557-576; Deshayes and Garašanin M., 1964, 1); Dikhil Tash in Greek Thrace (Deshaye and Garašanin M., 1964, 1); and Porodin near Bitola in Yugoslav Macedonia (ed. Grbić, 1960).

It should not be forgotten that a quite likely source for the eneolithic Dimini painted ware, as well as that of the Thracian and Macedonian sites is the important class of painted wares which occurs in association with the black burnished incised ware of the Larissa and related cultures (Holmberg, 1964, 343-348; French, 1961, 99; 1964a, 125; 1964b, 30-49).

It is beyond the scope of this study to go further into this question; it is sufficient to state the negative point, that it is highly unlikely that the painted pottery of the Transilvanian Petrești culture made any contribution to the development of the painted pottery of the contemporary cultures in Greece and south Yugoslavia, and that a much more likely source for these latter is in the preceding painted pottery of the Larissa culture.

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## Summary

It is suggested that the main development of the Petrești culture took place on the large stratified sites, such as La Tărtăria; the earliest settlement of these sites was by communities with a localised version of the early Vinča-Tordoș culture, known as the Turdaș culture. On a basis of the material of this culture, but with additional influence and stimulus from the painted pottery of the middle phase of the Linear Pottery culture of the Alföldi, painted decoration developed on the fine ware and eventually dominated the decoration of this fabric. The initial phase in the development of the painted decoration is known as the Turdaș-Petrești phase. Many of the settlements of this phase have produced intrusive sherds belonging to the first two stages in the development of the Boian/Pre-Cucuteni culture.

The "classic" phase of the Petrești culture is characterised by the typical dark brown on light orange ware; copper also occurs sporadically in the settlements of this phase. The Petrești culture in its "classic" form must begin slightly earlier than the earliest painted ware of the south-east part of Transilvania and Moldavia (Cucuteni Al), and it seems likely that the painted ware of the Petrești culture is responsible for many of the painted designs of the Cucuteni culture. However, the whole question of the effect of the Petrești culture on the Cucuteni culture will be discussed in the next chapter after the development of the Pre-Cucuteni/Boian cultures has been analysed.

/Although the



Although the innovating Petrești culture undoubtedly had a strong effect on the cultures to the east of it, there are no positive grounds for believing that it had any effect on the cultures south of the Danube, let alone those on the far side of the Balkan range of mountains, such as the Dimini and related cultures.

It is difficult at present to judge how long the Petrești culture lasted in Transylvania; it must certainly have been partly contemporary with the copper-using Gumelnița and Cucuteni A/Tripolye B1 cultures; however, a relatively early disappearance of the painted patterns and degeneration in the material culture is evident in the succeeding Petrești-Coțofeni phase.

In general the material culture of the Petrești culture is related to south east Europe, but the stimulus for the painted patterns was from the Linear Pottery cultures of Temperate Europe.

## Chapter II

The influence of the Linear Pottery culture of Moldavia, Muntenia and south-east Transylvania on the subsequent development of the Boian/Pre-Cucuteni culture.

It is now recognised that the development of the Boian/Pre-Cucuteni group of cultures in the eastern and south-east part of Rumania, Moldavian SSR, and north-east Bulgaria is the result of a mixture of elements of the preceding Linear Pottery culture and Dudești and related cultures. Before it is possible to see how important the effect of the Linear Pottery element was in the various regions of this large area, it will be necessary briefly to discuss the development of the Dudești element and its related cultures along the lower Danube and in south Bulgaria.

Once the contribution of both elements has been analysed, it will be possible to trace the further development of the Boian/Pre-Cucuteni group and the gradual evolution of two distinct cultures, the late Boian and subsequent Gumelnița culture on the one hand, and the Cucuteni/Tripolye culture on the other.

### 1) The Dudești and related cultures of the lower Danube.

MAP IV The appearance of the material of the Dudești culture in the south east part of Rumania (Muntenia) is related to the appearance of similar material known in Yugoslavia as the Vinča-Tordoš culture, in south-west Rumania (Oltenia) as the Vădastra I culture, in north Bulgaria as the Chotnica culture, and in south Bulgaria as the Veselinovo culture. The most distinctive feature of all these cultures is the absence of painted decoration on the fine pottery, as was seen in the preceding early

/neolithic

neolithic cultures, and the predominance, among the fine wares, of black or grey hard fabric, with a highly burnished surface, which is undecorated or decorated by fine fluting or channelling. The nearest analogies which this fine ware has outside the sphere of the Karanovo I/Starčevo/Criş cultures is in the late chalcolithic material of Anatolia (French, 1961, 99; 1964a, 125; 1963, 29). It seems likely that the fine black-burnished ware which is obviously intrusive in the material culture of south-east Europe, and which gradually excluded the technique of painted pottery, is the result of the expansion of influence or actual colonists from the Anatolian settlements. However, not all groups of the fine pottery which are seen in the late Chalcolithic sites of Anatolia occur in the Veselinovo, Vinča etc. settlements of the Balkan peninsula; for instance, the white on black painted ware occurs outside Anatolia only in the settlements of north Greece in the material of the Larissa culture.

Although the pottery represents in most cases a break with the traditions of the preceding early neolithic cultures of south-east Europe, settlements with the black burnished pottery are very often situated in the same locations as the Starčevo and Karanovo I etc. settlements. On the tell settlements, as at Vinča and Karanovo, a hiatus representing a gap in settlement is often visible between the layers with the early neolithic culture material and the layers with the black-burnished ware. However, the hiatus does not always correspond with the disappearance of painted ware and appearance of black-burnished ware, since the plain burnished ware decorated by fine channelling

/appears

appears frequently before the hiatus in the stratigraphy, in association with the declining painted decoration

Besides the settlements frequently being located in the same tell settlements as those of the early neolithic cultures, other aspects of the material of the two groups of cultures are very similar, including house-types, clay figurines, an economy based on agriculture, bone spatulae, polished stone implements etc. However, all these features occur in the Veselinovo, Vinča and related cultures in an evolved form. The question of whether the evolution of the new forms took place outside the area of Karanovo I/Starčevo etc. cultures, or whether it is a result of continual development, within south-east Europe, from the early neolithic material, even though the black-burnished pottery and its associated pottery shapes are an obvious intrusive introduction from outside, is beyond the scope of this thesis.

The Veselinovo culture is seen in the tell settlements of south Bulgaria frequently stratified above material of the Karanovo II culture, and frequently separated from it by a sterile layer. (Georgiev, 1961, 65-71). At Yase Tepe however there is continuous settlement from the Karanovo II culture to that of the Veselinovo type, but there is no material representing the Karanovo I culture, which is characterised especially by painted decoration (Detev, 1948, 1-13; 1959, 46-55; 1960 5-55).

The pottery of the Karanovo II culture is distinguished especially by fine pottery in similar forms to those of Karanovo I but decorated by fine channelling or fluting instead of the painted designs which were described in Part I, Chapter 1.

/The forms



The forms include tulip-shaped pots on low cylindrical pedestals, globular pots with cylindrical necks, hemispherical bowls on low pedestals etc. (Georgiev, 1961, 63-65).

The pottery of the Veselinovo culture or layer III at Karanovo includes similar fine grey or buff fabric with a smooth burnished surface, but it is predominantly undecorated, except for occasional plastic warts, and the forms are rather different from those of the preceding layer, consisting especially of high cylindrical beakers, piriform vessels and wide bowls on four simple cylindrical legs or with disc bases. The pots are frequently supplied with a very characteristic "Veselinovo handle". The coarser ware consists of biconical or globular pots, decorated by finger-and-nail-impressions and simple bands of dots which are only very rarely confined by solid incised lines which is the typical style of decoration of the coarser ware of the Vinča culture.

Houses of the Karanovo II and Veselinovo cultures continue the traditions of the Karanovo I houses in being made predominantly of clay on a light wooden framework; the houses of Karanovo II are simple square single-roomed structures, whereas those of the Veselinovo culture are rather larger and consist frequently of a large room with smaller rooms attached.

Other features of the material culture such as clay figurines, clay "lamps" etc., continue but in evolved forms.

The Veselinovo material of south Bulgaria, both in its pot forms and decoration, and even in its flat cylindrical headed figurines tends not to conform to the pattern of the material

/culture

culture of majority of cultures in the Dudești/Vinča group.

(B) The Dudești/Chotnica culture has certain features very reminiscent of the south Bulgarian Veselinovo culture, such as the solid upright handles of some of the pots, but in other details of the material there are only superficial resemblances between the two cultures. The name Chotnica I refers to the settlements with material almost identical to that of the Dudești culture but south of the Danube, whereas the settlements of the latter culture are distributed in the south-east of Rumania (Muntenia) north of the Danube (Comșa, 1962, 58-61). Only a small number of sites with the Dudești/Chotnica I material has so far been discovered and excavated.

As in the Turdaș culture of Transilvania, and the Vinča-Tordoș culture of Serbia and the Banat region, the pottery of the Dudești/Chotnica I culture consists of three basic groups:

(a) thick coarse ware, decorated with various forms of rustication, including finger-and-nail-impressions, and running the fingers over the pot when it was wet.

(b) finer, although still relatively thick ware, decorated by predominantly incised patterns consisting especially of bands filled in with incised cross-hatching; the bands filled in with dots in the "winkelband" style of the Vinča-Tordoș culture of the Banat, Transilvania and Serbia does not occur in this region; the patterns of this group of pottery include especially meanders and other rectilinear designs, and occasionally curvilinear designs, including spirals. The surface of the pottery is smooth but not burnished.

/ (c)

(c) fine thin black burnished ware forming sharply-angled biconical pots decorated with finely fluted or channelled parallel lines in simple rectilinear designs as in the Vinča-Tordoş and Turdaş cultures.

It has been thought that, on a basis of the decoration of the pottery, it is possible to divide the Dudeşti material into Dudeşti I, as represented in the lower layer of the site of Dudeşti where "Criş" elements appeared in the rusticated decoration of the coarse pottery, but no fine burnished ware with fluted decoration occurred, and Dudeşti II as at Cernica where no coarse rusticated ware occurred, although fine burnished channelled ware frequently occurs (Cantacuzino and Morintz, 1963, 47). The only possible stratigraphical evidence for such a division of the culture comes from the site of Dudeşti (Comşa, 1956, 41-53; 1959b, 96-97).

The forms of the pottery of the Dudeşti/Chotnica I culture, include sharply-angled biconical bowls, with the top part often shorter than the lower half, and frequently with a short wide cylindrical neck; this form is especially associated with the fine burnished ware although the coarser incised ware is occasionally made into rounded biconical pots; wide bowls on high flaring solid pedestals are rarer in south-east Rumania than they are farther west in Oltenia and the Banat.

There is no evidence for surface houses from the settlements of the Dudeşti/Chotnica I culture, although pits referred to as pit-dwellings do occur as at Cernica (Cantacuzino and Morintz, 1963, 33).

Evidence for the economy of the settlements has been

/provided

provided by the animal bone material at Cernica (Cantacuzino and Morintz, 1963, 34-35) and Radovanu (Comşa, 1965, 40). From the latter site a total of at least 93 bones have been identified, all of which are from domestic cattle, representing at least 4 individuals. At Cernica, domestic cattle bones also predominate with sheep/goats as secondary domestic animals; there is also evidence for hunting and fishing. At Drăghiceanu, also, domestic cattle bones predominate with sheep/goats as secondary domestic animals (Păunescu, 1964, 303).

The flint blade industry of the Dudeşti/Chotnica I culture includes especially short blades with sharp retouching down both edges frequently forming a point at one end; the bulb of percussion is not often retained. There are also round scrapers, and trapezes have even been excavated from the site of Drăghiceanu (Păunescu, 1964, 302); from this same site 70% of the blades are shorter than 3.5-4 cm. At Radovanu, also, Comşa has recognised a similar microlithic content in the blade industry associated with the pottery of the Dudeşti culture (Comşa, 1965, 40). It seems, therefore, that the blade industry, as well as the pottery, represents a break in the traditions of the early neolithic cultures of this region, although the predominance of small pointed blades with steep retouching, and small round scrapers does not necessarily relate the industry to the preceding mesolithic industries of Giurgiu (Malu Rosu) etc. (Nicolaescu-Plopşor, Comşa, et al. 1956, 223-235).

Polished stone implements include wide trapezoid and narrow long rectangular axe/adzes with plano-Convex or even lens-shaped cross-profiles.

/Clay figurines



Clay figurines occur in the material culture of the Dudești culture but they are not a common feature; the two from Cernica both have flat bodies and one has rounded built-in arms and a cylindrical head, in a very similar style to the contemporary figurines of Yasa Tepe in south Bulgaria (Cantacuzino and Morintz, 1963, fig. 8:2,3; Georgiev, 1961, fig. 3:2).

There is no evidence from the sites of the Dudești/Chotnica I culture for burials, except possibly the four inhumations from the large cemetery at Cernica which are crouched, whereas the majority, which are from the earliest phase of the Boian culture, are extended inhumations. (Cantacuzino and Morintz in discussion in the Institute of Archaeology, Bucuresti, June 1965).

(C) In the south-western part of Rumania (Oltenia) and the north-west part of Bulgaria, there are a number of sites which, like those of the Dudești/Chotnica culture are not always in the same locations as the preceding Criș culture, with material similar to that of south-east Rumania and the Vinča-Tordoš culture of Serbia and the Banat, and referred to as the Vădastra I or Rast culture, after the two most important sites. (Berciu, 1961a, 35-46).

The pottery consists of the same fine black/brown thin ware with a burnished surface and often decorated with fine fluted lines; wide carinated bowls on tall flaring half-hollow pedestals also occur as at Verbicioara with a red burnished slip as in the Vinča-Tordoš and Turdaș culture (Berciu, 1961a, fig. 4:1). The predominant form of the fine ware is the sharp-angled biconical bowl, which also grades into rounded bi-conical

/bowls

bowls, and in the other direction, to carinated bowls.

The coarser ware associated with the fine fluted burnished ware is decorated with very similar incised patterns to those seen in the Dudești coarseware, consisting especially of bands filled in with incised cross hatching, although this style is confined more to the valley of the Olt, whereas, in the more western part of Oltenia, as at Rast, Verbicioara and Ostrovul Corublui, the "winkleband" incised style is more frequent on the coarser ware (Berciu, 1939, 23-37; Dumitrescu V., 1957, 307-309).

Evidence for the economy of the Turdaș-Vădastra I culture in Oltenia comes especially from the analysis of the animal bone material of the tell settlement at Rast, on the Danube. The evidence is especially from layer I of the site which contains material similar to that of the Vinca-Tordos culture of Serbia (Nicolaescu-Plopșor and Dumitrescu V. 1951, 267-274); the analysis shows that 91% of the total number of bones is from domestic animals; of these domestic animals the bones of cattle are slightly more than those of sheep/goats (42% and 36% respectively), with domestic pig of comparatively minor importance (18%). This evidence is similar to that from the settlements of the Dudești culture in the predominance of cattle and sheep/goats among the domestic animals, and the virtual exclusion of wild animals, although it is a completely different pattern from that of the contemporary Linear Pottery settlements of Moldavia as shown in Part I, Chapter 3. (e.g. Necrasov and Haimovici 1962, 262).

/The flint blade

The flint blade industry, as seen at Verbicioara, on the Danube includes microlithic implements, as in the Dudești culture settlements, although the majority are macrolithic blades with the bulb of percussion retained, as in the Serbian and Banat Vinča-Tordoš culture and the Linear Pottery culture of temperate Europe (Berciu, 1951, 234, fig. 4; 1961a, 37).

The main working implements, however, are the trapezoid polished stone axe/adzes with a flat rectangular, plano-convex, or lens-shaped cross-profile; the long narrow rectangular axe/adzes with a thick plano-convex cross-profile also occur.

Figurines similar to those of the Serbian Vinča-Tordoš culture occur at Ostrovul Corbului etc., but the majority of the elaborate figurines from Rast are from layer II of the settlement with material similar to the Serbian Vinča-Pločnik culture (Vinča C). There is no evidence for burials from the settlements of the Vinča/Vădastra I culture of Oltenia.

In recent years, there has been a great confusion as to what is meant by the term "Vădastra I", and the relative chronological position of the various groups in the lower Danube related to the Vinča-Tordoš culture of Serbia.

However, in general, it may be said that most of the material of the Dudești culture (referred to by some as Dudești II), is contemporary with the material referred to as Vădastra I or Proto-Vădastra and with the material in the west part of Oltenia and Serbia which belongs to the early part of the Vinča-Tordoš culture (Vinča Bi) (Srejović, 1960, 5-19). However, there does possibly exist an earlier phase of this material as seen in the

/early layer

early layer at Dudești (Dudești I?) and in layer II a at Verbicioara which has been related to the earliest appearance of the Vinča culture (Vinča A). The evidence for this possible early phase in the development of the black burnished ware cultures is very infrequent. The main Dudești and Vădastra I material may be regarded as contemporary with the Moldavian Linear Pottery.

- 2) The initial stage in the development of cultures formed from mixed Linear Pottery and Dudești elements in Moldavia and Muntenia.

MAP  
V

The material which developed as a result of the amalgamation of the two distinct cultures, the Linear Pottery culture from the north and the Dudești culture from the south, may be interpreted as representing several local groups within basically the same culture; the Rumanian archaeologists, however, have generally regarded the area as too large for the diffusion of one culture and have preferred to refer to two basic cultures: the Boian culture and the Pre-Cucuteni cultures (Comșa, 1957a, 61-73; Dumitrescu H., 1957a, 53-73; Alexandrescu, 1961, 21-37).

It is true that the material of the post-Dudești and post-Linear pottery settlements of Muntenia and Moldavia is dominated by the development of these two distinct cultures, which in their turn, develop into the important eneolithic Cucuteni and Gumelnița cultures; but, in the initial stage of their development, the material culture in both regions is quite uniform, and any diversions from the norm represent, at the most, slight regional variations. The uniformity continues into the next phase of

/their development



Boian culture when the two cultures had already amalgamated. The early phase in the evolution of the mixed culture may be seen in one or two sites in northern Muntenia, which are as yet unpublished (material with V. Teodorescu in the Ploiești Museum). Teodorescu has referred to this material as the Sudiți culture, although there is hardly enough data for a distinct culture to be recognised. The most important site with this material, at Sudiți in the Buzău valley, consists of two neighbouring pits; one contains material with pure Linear Pottery of the Moldavian type, consisting of simply hemispherical bowls with flat bases, and sometimes short wide cylindrical necks, decorated in an evolved form of the "notenkopf" designs described in Part III, Chapter 2, with four or five parallel lines surrounding the rim. The second pit contains some normal Moldavian Linear Pottery sherds, and others which have obvious elements inspired by the Dudești culture, including fine channels to emphasise the incised lines round the rim. also the Moldavian Linear Pottery feature of a short cylindrical neck is transformed by being joined to the body of the pot at a sharp angle similar to the sharp-angled biconical pots of the Dudești culture. Other Dudești features such as triangular perforated lugs also appear on the Linear Pottery sherds.

In the pottery of the Boian/Pre-Cucuteni I phase, the process of transformation and disintegration of the Linear Pottery forms and decoration by the admixture of Dudești culture features has gone one stage further than that seen at Sudiți. Comșa has recognised three basic groups of pottery in the material of the

/Muntenian settlements

Muntenian settlements, such as Aldeni (Comsa, 1955a, 17-24):

(a) Thick coarse ware with a certain amount of chaff-tempering, as well as micaceous and sandy inclusions; the surface is smooth and decorated by various forms of rustication, especially running the finger across the pot when it was wet.

(b) Less coarse, thinner hard ware, tempered with fine mineralogical inclusions; the clay is a grey/black colour with a smoothed and, even, burnished surface which is decorated with incised patterns. These patterns are derived partly from the bands filled with incised cross-hatching of the Dudesti culture, but the source for the patterns is predominantly the evolved designs of the Moldavian and Muntenian Linear Pottery culture. The Boian/Pre-Cucuteni I patterns continue the tendencies seen in the evolution of the Moldavian Linear Pottery patterns from those of the upper Dniester and south Poland, in increasing the number and proximity of the incised lines and the number and proximity of the indentations which interrupt them and which also become more carelessly executed and evolve into mere strokes.

Thus, as in the patterns of the late Linear Pottery and post-Linear pottery cultures of central Europe, the designs of the earliest Boian/Pre-Cucuteni pottery develop the idea of an interrupted line to such an extent that the small indentations have been increased to the virtual exclusion of the original solid lines, and the patterns consist of rows of triangular indentations; in this early phase, which still includes the disintegration of the Linear Pottery patterns, there are not usually solid lines between the rows of indentations except

/occasionally

occasionally one or two; this feature, which one might refer to as a positive, constructive development in the new decorative style, is especially typical of the second phase of the culture.

The forms associated with this fabric include those seen in the pit at Suditi, and especially deep, fairly straight-sided bowls with a wide cylindrical neck which is joined to the body at a sharp angle; this form epitomises the mixture of the Moldavian Linear Pottery elements and those of the Dudești culture. Other forms include wide hemispherical bowls with flat bases.

(c) Fine thin grey/black ware with a burnished surface which is decorated by fine fluted or channelled lines in simple interlocking lines, wavy lines straight horizontal lines etc. especially on the upper part of the pot; the fabric, forms and decoration of this group are almost identical to those of the Dudești and related cultures. The dominant form of this ware is the sharply-angled wide biconical bowl.

The settlements of the initial phase of the Boian/Pre-Cucuteni culture are situated especially on the lower terraces of the river valleys, similar to the location of the Linear Pottery settlements. There is no evidence for surface houses from the settlements, although pits interpreted as pit-dwellings are frequent occurrences.

Evidence for the economy of the settlements with this material comes from the site of Traian (Dealul Vieii) in Moldavia, where a detailed analysis of the animal bone material has been made (Necrasov and Haimovici, 1962, 262-263); there has not  
/yet been

yet been an analysis of the bone material from any of the settlements of this phase in the south-east part of Rumania although the bones of domestic cattle and sheep/goats are reported, which may indicate a similar relative importance of sheep/goats as in the Dudești culture. (Comșa, 1955a, 66).

The analysis from Traian shows that 80% of the total number of animal bones are from domestic animals, which is a much higher proportion than that of the Moldavian Linear Pottery sites, such as Traian (Dealul Fintinilor), although the percentage of individuals represented by the domestic animal bones at Traian (Dealul Vieii) is only 67%. Of the total number of domestic animal bones, 90% are from cattle, which, again is a much higher proportion than in the Moldavian Linear Pottery settlements, and 3.5 - 5% are of domestic pig, with 4% from sheep/goats. The majority of wild animal bones are from red deer, and, to a certain extent, wild pig. The main difference between the economy of the Linear Pottery and Pre-Cucuteni sites as indicated by the animal bone material is the increase in the importance of domestic animals compared to wild animals, and a decrease in the importance of pig among the domestic animals. There is not enough detailed evidence from the settlements of the Dudești culture to judge whether these differences are due to influence from the Dudești settlements.

The flint blade industry is completely macrolithic, although the majority of blades are not more than 3.5 - 5 cm. long; they are predominantly simple with little side retouching, and with the bulb of percussion frequently retained. There are long side end scrapers, but these are especially common in the next phase.

/Polished



Polished stone implements include the wide trapezoid axe/adzes with a flat rectangular cross-section, but especially frequent are the narrower, longer rectangular or slightly trapezoid axe/adzes with a thick plano-convex cross-section.

Evidence for the burials of the Pre-Cucuteni/Boian I culture comes especially from the recently excavated cemetery of Cernica, near Bucureşti, where at least 115 graves from this period have been excavated (Cantacuzino and Morintz, 1963, 53-89). The majority of these burials consist of extended inhumations, lying on their backs, which is a method of burial much more reminiscent of the contemporary hunting/fishing communities of the forest and forest/steppe of the USSR (e.g. Telegin, 1966, 3-13) than the burial traditions of the neolithic cultures of central and south-east Europe, which, as shown in this study, consist predominantly of crouched inhumations among the houses and pits of the settlements. The burials are in shallow pits, with a very few grave-goods including polished stone axes, spondylus and other shell objects and even two copper beads; the pottery associated with the burials includes small globular pots not decorated with the usual patterns of the Boian-Bolintineanou style, but more by rustication. The nearest analogies to the Cernica cemetery seem to be in the cemeteries, such as Cernavoda, belonging to the Hamangia culture, which contain large numbers of extended inhumations lying on their backs in shallow pits (Berciu, 1957, 83; Necrasov, 1959, 99; Comşa, 1960b, 89-91). Many other features in the material of the Hamangia culture, for example the pottery decoration, show close affinities with /the contemporary

the contemporary cultures of the Bug, **Dnieper and related valleys**. It is unlikely, however, that the Hamangia culture made more than a superficial impression on the contemporary settlements of south-east Rumania, including those of this and later phases of the Boian culture.

3) The second stage in the development of the Boian/Pre-Cucuteni cultures.

MAP  
V

The second phase of the Boian/Pre-Cucuteni culture group, known as Pre-Cucuteni II and Boian-Giulești or Boian II, is marked by an increase in the number of settlements with material of the culture, and by an expansion in their distribution area to include not only south-east Rumania (Muntenia) and north-east Rumania (Moldavia), but also central Rumania on the far side of the Carpathians (south-east Transilvania), and sporadically in south central Transilvania; in the other direction, pottery of the Pre-Cucuteni II style occurs on the river Reut, as at Florești, where it has been referred to as Boian-Giulești (Passek, 1962, 135).

As in the initial stage in the development of these cultures, the pottery of the second phase exhibits considerable uniformity in its fabric, form and decoration in all the regions of its diffusion. The three basic groups of pottery continue their distinct development patterns:

(a) The thick coarse ware, decorated by various forms of rustication, especially by running the fingers over the surface when it was wet, and by applied plastic bands with finger - impressions.

/(b)

(b) thinner less coarse ware, with gravelly inclusions; the fabric is grey, or occasionally buff, with a smooth, partly-burnished, surface which is decorated by incised and excised patterns, the latter frequently being filled with white encrusted paint. The patterns are all developed from the preceding initial stage of the cultures and consist of predominantly rectilinear designs made by parallel incised lines, often with the areas between them excised; the evolved "notenkopf" design of the initial stage which consisted of a line interrupted by triangular strokes or a simple row of triangles without a solid line, evolves in the second phase into rows of hanging excised triangles with solid incised parallel lines between the rows. The checkboard excised pattern which is seen occasionally on sherds of the Boian/Pre-Cucuteni I culture, and which was probably developed from the crosshatched incised patterns of the Dudesti culture, appears frequently on the pottery of the second phase of the culture, in combination with incised solid parallel lines.

(c) fine thin grey/black ware, with a highly burnished surface, which is decorated by finely channelled or fluted lines, in rectilinear patterns, especially on the upper part of the pot; the channelling is occasionally combined with thin incised lines, or a row of small round pricked impressions; the channelling is made rather deeper in the pottery of this phase than that of the preceding phase and the Dudesti culture.

The channelled ware is most typical of south-east Rumania, and Moldavia; in the latter area, the channels are even more

/emphasised

emphasised than in Muntenia. In the sites of south-east Transilvania, as at Leț, the channelled decoration is comparatively rare, and the fine black/grey burnished ware is most commonly decorated with fine incised lines in paralld bands round the rim and lower part of the pot, and with patterns reminiscent of an eveolved form of "notenkopf" design in between (Nestor, 1957a, 59; material mostly unpublished in Sf. Gheorghe Museum). This type of decoration also occurs in south-east Rumania, as at Aldeni (Comșa, 1957b, 39-41; 1963b, 7-32). Comșa sees in it a possible secondary influence from the Linear Pottery designs (Comșa in discussion at the Institute of Archaeology, București, in June 1965). It is likely also that the Boian-Pre-Cucuteni material in Transilvania is from the end of the initial phase of the culture and developed rather independantly of the Muntenian and Moldavian material during the second phase, which may account for the possible retarded Linear Pottery elements in the designs, and the general absence of fine channelled decoration.

The forms associated with the various groups of fabrics also develop from the preceding phase. The straight-sided or globular bowl with a short, wide cylindrical neck joined to the body by a sharp angled shoulder is especially frequent in the coarser incised fabric of the second phase of the culture; in this phase the body is rather deeper and the neck higher than in the initial stage.

Among the forms associated with fine burnished ware decorated by fluting or channelling in Muntenia and Moldavia, and

/fine incising



fine incising especially in south-east Transilvania, the forms which evolved from the wide sharply-angled biconical bowls of the initial phase of the culture and the Dudești culture predominate. Often the upper part of these bowls in the second phase is slightly carinated, and is frequently shorter than the lower part of the bowls; in Transilvania and Muntenia the wide bowls with a straight-sided upper part and hemispherical lower part occur; in Moldavia, the bowls are rather deeper than in the south and west, and the out-curving rim or slightly carinated upper part is especially frequent, as at Larga Jijia (Alexandrescu, 1961, 31). In Moldavia, also, there occur the wide bowls with a flaring rim. Both these last-mentioned forms become typical of the succeeding material in this region.

In Transilvania, probable elements from the central Transilvanian Petrești forms may be seen, as at Leț, in the sharp-angled biconical bowl on a tall cylindrical hollow pedestal.

The settlements of this second phase of the Boian/Pre-Cucuteni cultures are situated on the lower terraces of the valleys, as at Giulești itself; settlements also occur on islands and promontories, as at Aldeni and Glina, although this latter location for settlements is especially typical for the subsequent phases of the cultures. (Comșa, 1957b, 30-31).

Surface houses represented by rudimentary clay floors, but not of the true ploščadki type occur possibly at Giulești (Comșa, 1957a, 63) and Florești in the Moldavian SSR. (Passek, 1962, 133); the majority of structures interpreted /as houses

as houses, however, are "pit-dwellings", as in the initial phase.

There is very little evidence for the economy of the settlements of this phase; impressions of grains of *Triticum monococcum* and *Triticum vulgare* have been recognised in the sherds of the Boian-Giulești settlements (Comșa, 1957a, 66). But no detailed analysis of the animal bone material has been made from any of the settlements.

The flint blade industry includes simple blades with slight retouching on the edges, 2.5-5 cm. long, and wide end-scrapers, although these latter are not as long as those of the Moldavian Linear Pottery settlements.

Polished stone implements include especially the long rectangular or slightly trapezoid axe/adzes with predominantly low plano-convex cross-sections. There is evidence for copper objects in this phase from only one site: Florești in the Moldavian SSR, consisting of a square-sectioned copper pin (Passek, 1962, 133); the material of this site is probably from the later part of the second phase, but it is likely that this copper is earlier than the copper objects of the third phase as seen in layer 12 of Izvoare (Vulpe, 1957, 110).

A feature which becomes typical of the material culture of the second and later phases of the Boian/Pre-Cucuteni group is the tradition of manufacturing clay female figurines; these are especially characteristic of the Moldavian settlements, such as Large Jijia (Alexandrescu, 1952, 47-48, 55-56; 1961, Pl.VIII), Florești (Passek, 1962, 134), and Izvoare I 1 (Vulpe, 1957, 102-107). These consist predominantly of figurines with a

/flat body

flat or cylindrical body with a long cylindrical neck; the heads of the figurines of this stage are often distinguished from the neck with eyes and mouth represented by depressions or incisions, and the nose in relief; in the third stage, when a large number of figurines is typical in the material culture of all the Moldavian settlements, the head is often indistinguishable from the body and the facial features are hardly represented. The lower part of the body in the figurines of the second phase consist of large buttocks with the legs separated, or at least differentiated; however, examples do occur of the type with the legs represented by a single conical leg, which becomes typical of the figurines of the third stage of the culture. The figurines, even in this second phase are invariably in a half-seated pose, which predominates also in the third phase. Thus it is clear that the figurines of the third phase of the Pre-Cucuteni culture are developed from those of the second phase. Prototypes for those of the second phase, however, are more difficult to find.

In the south-eastern part of Rumania during the Boian-Giuleşti phase, clay figurines also occur on the settlements, although not in such large quantities as in Moldavia. Figurines occur at Bogata (Anghelăscu, 1955, 316) fig.7: 1-2), Greaca (Comşa, 1955b, fig. 8), and Aldeni (Stefan and Comşa 1955, 70); they consist of flat upper parts, with simple cylindrical or conical heads with pinched-out noses and the eyes represented by incisions. The lower part has exaggerated buttocks, and the figurines are standing.

/In the preceding

In the preceding initial phase of the culture, there is only one site with a clay figurine from Muntenia: Cățelu (Comșa, 1955a, fig.14); it consists of a cylindrical buttock, decorated by incised lines. In the Moldavian site of Traian (Dealul Vieii), however, figurines with analogies in the Dudești and Veselinovo and related cultures were excavated, and may possibly represent prototypes for the Moldavian examples of the second phase (material unpublished in Piatra Neamț Museum). There is also a theory that the sudden appearance of large quantities of clay figurines of a type which appears to have no prototypes in the south, may represent the manufacture in clay of figurines which had been manufactured in an organic material on the settlements of the Linear Pottery culture of Moldavia and the Ukraine; they are more likely, however, to represent a local popularity in the manufacture of figurines, stimulated by prototypes in the preceding cultures from the lower Danube, south Bulgaria, and possibly the Dobrogea.

Evidence for burials in this phase comes from Leț, and Sf. Gheorghe in Transilvania, and Glina in Muntenia. They consist of crouched inhumations, lying on their left side, among the pits and in the pits of the settlements (Comșa, 1960b, 87-89).

The relative chronological position of the second phase of the Boian/Pre-Cucuteni cultures is indicated by the stratigraphy of a number of sites. Settlements of this phase are stratified above settlements of the Linear Pottery culture in Moldavia at Florești (Passek, 1962, 132-134), and Tirpești (discussion with V. Dumitrescu and S. Marinescu-Bîlcu in the

/Institute



Institute of Archaeology, Bucureşti, in June 1965); at Larga Jijia, the Pre-Cucuteni II settlement is 100 yards away from the Linear Pottery settlement. In the same region, the Pre-Cucuteni II material is stratified below material of the third phase of that culture at Izvoare (Vulpe, 1957), and Tirpeşti (Marinescu-Bîlcu, 1962, 235-243; 1964, 307-312).

In Muntenia, material of the Boian-Giuleşti culture is stratified above that of the Boian-Bolinteanou phase at Cernica (Cantacuzino and Morintz, 1963, 32), Aldeni (Stefan and Comşa, 1955, 93-102) and Boian (Vărăşti) (Comşa, 1957a, 72). The Boian-Giuleşti material is stratified below material of the later-phases of the culture at Tangîru (Berciu, 1961a, 369-371) and Glina (Comşa, 1957b, 29).

In south-east Transilvania, material of the second phase of the Boian/Pre-Cucuteni group, or possibly slightly earlier is stratified above material of the Criş culture at Leţ (Nestor, 1957, 59) and Zălan (Szekely, 1953, 15-16). The same material is stratified below painted pottery of the Ariuşd type at Let (Nestor, 1957, 59) and Comalău (Schroller, 1933, 78).

Sporadic sherds of the same material occur on several sites in south-west Transilvania, already described in the previous chapter in association with material of the earliest phase in the evolution of the Petreşti culture, known as the Turdaş-Petreşti culture, as at La Tărtăria, Turdaş, Lumea Nouă etc.

The tendency towards regional specialisation increases in the subsequent phases of development of the Boian/Pre-Cucuteni cultures, and at least two and possibly three or four distinct  
/cultures

cultures may be seen:

- (a) south-east Transilvania.
- (b) south-east Rumania (Muntenia).
- (c) Moldavia, Moldavian SSR and the west Ukraine SSR.
- (d) Transitional region of south Moldavia/north Muntenia/  
north Dobrogea.

Although any direct effect or influence from the Linear Pottery cultures had long since ceased to exist by this time, it would be more satisfactory to trace the subsequent development of the cultures which were given part of their initial stimulus by the Moldavian/Muntenian Linear Pottery cultures.

#### 4) The subsequent development of the Boian culture.

Subsequent phases in the development of the Boian culture have been distinguished and defined with the aid of stratigraphical evidence from the recent control excavations at Tangîru (Berciu, 1961a, 367-372) and Petru Rareș (Berciu, 1961a, 488-504).

Phase III of the Boian culture, known also as Boian Vidra, is partly contemporary with the second phase in the development of the Pre-Cucuteni culture of Moldavia, but, although the pottery decoration and forms of the Boian Vidra phase show many affinities with Moldavian material, there are many features which occurred in the Boian-Giulești material and the Pre-Cucuteni II material which do not appear in the third phase of the Boian culture. Chief among these is the absence of incised lines on the thicker ware whose decoration in this phase is exclusively by excised lines, forming meanders, spirals, checkboard patterns etc.

/The fine

The fine burnished ware is decorated by fine fluted lines, occasionally in combination with fine incised lines.

Painted decoration after firing occurs first in the Boian material at Giulești from the second phase in the development of the culture (Comșa, 1957a, 69). However, this painted decoration first appears in any quantity in the third phase of the Boian culture, as at Vărăști (Comșa, 1957a, Pl.III) Tangîru and Vidra; it is executed on the fine ware in combination with the channelled lines and fine incised lines, and on the coarser ware in the excised areas.

The forms in the third phase of the culture show a great increase in their variety, but include basically the same forms as the Boian Giulești phase (Berciu, 1961a, 390-394).

Clay figurines occur in this phase, although no more frequently than in the preceding phase. In this and subsequent phases, they show an increasing development away from those of Moldavia; for example, the figurine from Tangîru consists of a neck and head, with the ears perforated, a pinched-out nose, and the eyes and mouth represented by incised lines and a hole respectively; whereas the contemporary figurines of Moldavia had very few facial features.

In Phase IV of the Boian culture, known also as Boian-Petru Rareș, the excised decoration of the coarser pottery reaches such a point that almost the whole surface is excised, leaving small areas of the original surface as a negative pattern, especially simple parallel horizontal lines, but also meanders. The excised surface is covered in white encrusted paint.

/Since the excavations

Polished stone implements include the wide rectangular or slightly trapezoid axe/adzes with a low plano-convex cross-section; however, perforated axes appear for the first time in Phase III of the Boian culture and continue throughout the Gumelnița culture.

5) The Proto-Gumelnița/Proto-Cucuteni material in south Moldavia/north Muntenia.

MAP VI In this transitional region of north Muntenia, south Moldavia and the northern part of the Dobrogea, it is possible to see the early development of painted ware on a number of tell sites in layers above those with material of the late Boian, late Hamangia and late Pre-Cucuteni cultures. Such sites are Stoicani (Petrescu-Dimbovita, 1953, 13-155), Aldeni I (Dumitrescu V., 1964a, 10) and Hîrșova (Galbenu, 1962, 285-306; 1963, 501-509). The material has been referred to as the Stoicani-Aldeni group, Hîrșova group, Proto-Gumelnița, Proto-Cucuteni etc.

The material is characterised especially by the development of fine brown/red pottery, made of the same fabric as that of the late Boian fine pottery; the forms include the wide carinated bowls of the late Boian culture, the deeper straight sided bowls of the late Pre-Cucuteni culture, and wide shallow dishes on high hollow cylindrical pedestals, which are thought to be derived from Hamangia forms. Decoration is by thin parallel lines painted in white as well as similar patterns painted in graphite paint.

The graphite painting never appears in the main area of the distribution of the Pre-Cucuteni and Cucuteni A culture, but it  
/is typical



is typical of south-east Rumania, from the late phases of Boian culture right through the development of the Gumelnita culture.

The white on red painting rarely appears in the main area of the Gumelnita culture, but it does occur in the southern part of the area of the Cucuteni A culture, including south-east Transilvania, as will be discussed below.

It would seem therefore, that the white on red painted patterns are a local development in the earliest Gumelnița/Cucuteni layers of this transitional region, possibly evolved from the graphite patterns of the late Boian culture, and that these red on white patterns made an important contribution in the development of the painted patterns of the Cucuteni pottery, although they never became fashionable in the area of the Gumelnița culture, where graphite painting predominated (Dumitrescu V., 1964a, 11).

Associated with the fine painted ware, there are sherds of coarser ware, as at Stoicani, which are decorated both with excised lines of the late Boian culture and the roughened surface typical of the Gumelnița culture.

#### 6) Later developments of the Pre-Cucuteni and early Cucuteni culture in south-east Transilvania.

MAP  
V. In the layer above that with the material of the second stage in the development of the Boian/Pre-Cucuteni culture at Leț (Nestor, 1957, 59) and Comalău (Schroller, 1933, 78), there is pottery which includes forms and decoration similar to those of the Moldavian Pre-Cucuteni III phase, but in association with tri-chrome and bichrome painted ware. The same pottery forms occur at the site of Ariusd after which the material is named. The

/sites

sites with this material are distributed almost exclusively in the valley of the upper Olt in south-east Transilvania, the westernmost point of its appearance being Tîrgu Mureş; thus its distribution is quite exclusive to that of the "classic" phase of the Petreşti culture, with which it must be partly contemporary (Vlassa, 1961, 22).

It has been attempted to distinguish various phases of internal development in the material at Ariuşd (Childe, 1929, 98-103; Laszlo, 1914, 279-417), although these are not based on stratigraphical evidence, but are merely typological. Most of the settlements with the Ariuşd material show only a single uniform layer with this material, although the Ariuşd layer is frequently stratified between layers with earlier and later material, as at Leţ, Comalău, La Reci (Szekely, 1964, 121-126); Schroller, 1933, 78). It is probable, therefore, that the material is from one cultural layer, representing settlement in south-east Transilvania, after the second phase in the Pre-Cucuteni/Boian culture and the contemporary Turdaş-Petreşti culture, and before the fully eneolithic Tiszapolgar culture, as is shown by the stratigraphy at la Reci (Dobojka) (Passek, 1961, 102).

The pottery of the Ariuşd type includes fine ware which is not as hard and thin as that of the Petreşti culture, but is more like the fabric of the preceding Turdaş-Petreşti phase; the Ariuşd fabric is fired a light orange colour, and the surface is smooth, but rarely burnished; the decoration of the fine ware is by painting in two distinct styles; the first is by painting /thin white

thin white parallel lines in curvilinear and rectilinear designs on the red matt or burnished surface before firing; this style is frequently combined with patterns made by deep curved channelled lines. The second style is by painting bands made of black lines on the matt red surface and filling in the spaces with a solid block of white paint or white parallel lines before painting.

The forms apply equally to both styles of painted decoration; they include wide flaring bowls, with a thickened rim typical of the Moldavian Pre-Cucuteni III pottery; wide hemispherical bowls, often with a carinated upper half, on a tall cylindrical flaring hollow pedestal, which may or may not be perforated; this form is typical of the late neolithic and eneolithic cultures of the Alföldi, Tisza basin, west Hungary etc. There are also forms developed from the preceding Boian/Pre-Cucuteni II deep shouldered pots, such as the rounded biconical bowls with a short wide cylindrical neck which is often connected to the body of the pot by a deep channel running round the shoulder of the pot. There are numerous other forms, making a large repertoire similar to that seen in the contemporary cultures of south-east and north-east Rumania.

The contribution made towards the painted pottery of the Ariuşd culture or group by the painted pottery of the Turdaş-Petreşti and Petreşti culture on the one hand, and the Proto-Cucuteni/Proto-Gumelniţa painted pottery on the other has been discussed at great length in a number of articles (e.g. Dumitrescu V., 1964a, 9-15; Vlassa, 1961, 22; Schroller, 1933, 69).

/It will be

It will be sufficient in this study to point out firstly that the trichrome painted pottery of central Transilvania, which is found in association with sherds of the Pre-Cucuteni/Boian II type, must be anterior, to a certain extent, to the painted pottery of the Ariuşd type, and that it could easily be considered responsible for the trichrome style of painting of the Ariuşd group, as well as for certain forms, for example the dishes on tall pedestals.

Secondly, the white painted patterns on the dark red background have direct analogies in the Proto-Cucuteni/Proto-Gumelniţa material of the transitional east Rumanian area described in the previous section. Many of the forms in the Ariuşd pottery also have analogies in this material.

A third source for decoration and forms in the Ariuşd pottery may be found in the material of the Moldavian Pre-Cucuteni III culture, to be described in the following section. These include the deep bowls with wide necks and channelled decoration.

Just as the Proto-Cucuteni painted ware, which is for the most part confined to south Moldavia, is predominantly anterior to the main development of the painted pottery of the early Cucuteni culture, so the painted pottery of the south-east corner of Transilvania must also, to a certain extent, be before the painted pottery of the Moldavian Cucuteni culture and could have contributed to the development of that decoration, especially in the development of the trichrome painted style, and possibly in the introduction of other features in the material culture.



Evidence for the surface houses of the Ariușd group comes from Ariușd itself, which is situated on a promontory; the settlement consists of 21 houses, approximately 8 x 5 m. with ploscadki floors, and wattle and daub walls (Childe, 1929, 98-103).

The promontory appears to have been defended by a ditch across its neck, similar to the contemporary fortified settlements of the late Boian culture in south-east Rumania, such as Spanțov (Morintz, 1963, 275). Thus the settlement type is similar to the contemporary settlements of south-east Rumania, but the houses with their ploscadki floors and two rooms have more affinities with the Petrești culture of central Transilvania.

Other features show possible elements from the retarded Turdaș culture of Transilvania, as seen in the "winkelband" decoration, figurines, etc. of the Petrești culture; in the Ariușd material, clay ladles with long handles which were common in the Turdaș culture appear, decorated in the same trichrome style as the pottery; other features include perforated "pintadera", and figurines, which are predominantly standing, often with perforated arms, and frequently decorated by incised lines rather than painting. Another feature reminiscent of the Turdaș culture are the bone spatulae.

The flint blade industry consists of long blades, with little retouching and the bulb of percussion invariably retained. The polished stone implements include especially the wide rectangular or slightly trapezoid axe/adzes with a low plano-convex cross-section. Perforated axes similar to those in the contemporary material of south-east Rumania, central Transilvania,

/the Alföldi

the Alföldi and the Tisza basin also occur. The increase in the manufacture of bone and antler implements which is apparent in these areas is seen also in the Ariuşd material. Copper consisting of square-sectioned pins occurs sporadically in this material, as at Ariuşd itself, but no working implements of copper appear yet.

7) The development of the Cucuteni/Tripolye cultures in Moldavia and the south-west Ukraine.

(A) Pre-Cucuteni III/Tripolye A: the development towards local specialisation in the forms and decoration of the pottery seen at the end of the second phase in the development of the Pre-Cucuteni culture, continues in the third phase of the culture, when the Pre-Cucuteni culture may be referred to as a separate entity. The typical Pre-Cucuteni III material is distributed at first on the high terraces of the valleys of the Prut and Seret and their tributaries, in the western part of (Rumanian) Moldavia, but in this phase settlement by communities with this material, representing in many cases the earliest agriculturalists, expanded into the eastern part of Moldavia and the western part of the Ukraine, especially along the Dniester and Reut rivers, in the regions previously occupied by the communities with the Linear Pottery culture; gradually the expansion of the culture or actual colonists reached the southern Bug valley and Dnieper, where it is stratified above material representing the former hunting/fishing populations, who, in some cases, had a slight knowledge of the agricultural techniques, for example the Southern Bug culture; in other places the material of the /early Tripolye

early Tripolye culture appears on newly established settlements.

As has been recently been pointed out by Sulimirski, however, there must have been a certain amount of time-lag between the establishment of the settlements and the expansion of the Pre-Cucuteni/early Tripolye culture from the western part of Moldavia to the eastern part of Moldavia, and from the Dniester valley to the southern Bug valley and so on; this must be particularly marked between the Pre-Cucuteni III settlements of Rumanian Moldavia, and the Tripolye A settlements of the Dnieper valley round Kiev (Sulimirski, Prehistoric Russia, in press, 37-42). Thus, although the Moldavian Pre-Cucuteni III material is basically similar to that of the Dnieper Tripolye A material, as in the absence of painted decoration, etc., the material of these two areas cannot possibly be contemporary, or regarded as exactly the same culture, and it seems probable that the greater part of the Dnieper and southern Bug Tripolye A material is contemporary with the early part of the middle phase of the western Tripolye/Cucuteni culture, that is, Cucuteni A2/A3 and Tripolye Bi, which is distinguished by painted decoration of pottery.

The material between the Seret and the Dniester constitute much more a cultural entity than that between the Dniester and southern Bug cultures. In the material from the Seret to the Dniester basins in the early phase of the culture referred to as Pre-Cucuteni III/Tripolye A, the pottery is marked by a complete absence of painted pottery. The decoration of the

/pottery

pottery continues the style which was developed in the preceding two phases in Rumanian Moldavia, Muntenia, and south-east Transilvania. The basic form of decoration of the fine pottery is by a combination of channelled/fluted and incised lines and small square or round indentations, often arranged in panels so that the upper part of the pot consists of simple channelled parallel lines, the middle part of the pot has the combined decoration typically including conical lugs, and the lower part of the pot is left plain. The patterns are predominantly curvilinear, consisting of lobes, running spirals etc. a typical design in the incised patterns is for part of the space between two solid incised lines to be filled in by perpendicular hatched incised lines; this form of decoration also occurs on the coarser ware.

The forms associated with the fine ware include a rich varied repertoire, but all evolved basically from the preceding phases. One of the most important forms is the biconical bowl with large conical lugs at the angle and with a turned-out rim attached to the body of the pot by a long conical neck, and always with a flat or concave base (Passek, 1961, fig.17; 1,10,11; Vulpe, 1957, fig. 16; 66:2).

Another form, which appears also in the coarser ware, is the wide bowl on a short conical hollow pedestal (Passek, 1961, fig.13:6; Vulpe, 1957, fig.41). This form also occurs with a hollow pedestal which is closed at the bottom and open at the top; in the Dniester and southern Bug basins especially the form with this latter type of pedestal and a globular body

/with a small



with a small mouth becomes very typical. (Passek, 1961, fig. 13:8,9).

The pottery is accompanied on almost every site by a large number of clay female or sexless figurines, similar to those of the preceding Pre-Cucuteni examples, such as at Larga Jijia, in a half sitting position, but in this phase they tend to be more exaggerated, with a flat upper part with a simple conical head and arms, and large protruding buttocks, and a simple conical undifferentiated leg; the whole surface except the head is covered by incised designs.

There is no evidence for surface houses from the settlements of this phase, but the pits found on all the sites, containing hearths, shell-middens etc. have been interpreted in almost every case as "pit-dwellings". (eg. Passek, 1961,42-46).

Evidence for the economy of the Pre-Cucuteni III/Tripolye A settlements comes especially from the analysis of the animal bone material of the Dniester site of Luka Vrublevetskaya (Bibikov, 1950; 1953). The analysis showed that 47% of the total number of bones were from domestic animals, especially cattle, and sheep/goats and pigs as secondary domestic animals; the most important wild animals were red-deer and roe deer, but fishing appears to have been equally as important as hunting and keeping domestic animals, to judge from the large numbers of fish bones, *Unio* shells, fish-hooks etc. found on the sites. (Passek, 1961,36). The site of Sabatinovka II on the southern Bug, which also has material of the Tripolye A type, but, for reasons discussed above, is likely to be slightly later than /the Dniester

the Dniester sites, shows a greater proportion of domestic animals (almost 60%) of the total number (Passek, 1961, 37, 84). Whether the presence of sheep on the sites as a secondary domestic animal is the effect of the relative importance of sheep in the economy of the preceding phases of the Pre-Cucuteni culture, and Dudești culture is difficult to tell, but the increase in the importance of hunting and fishing activities, especially in the Dniester and Bug valleys must represent a certain amount of assimilation to the economy of the previous population or adaptation to new forest/steppe conditions.

The flint blade industry includes especially long blades 4 - 6 cm. long which characteristically have an area of sickle gloss across one corner and along this the edge is sharply re-touched; the bulb of percussion is very frequently retained, and always on the opposite end to that with the sickle gloss. (Behm-Blancke, 1963, 111-112); Bibikov, 1953, Pl.9,10). These have been interpreted by Semenov, as representing "sickle-knives" rather than multibladed sickles (Semenov, 1954, 355). Other implements include especially the long wide end scrapers of a very similar type to those of the Dniester Linear Pottery culture (Passek, 1961, fig.8).

Copper objects appear sporadically in the settlements of this phase, as in layer 12 of Izvoare, where a square-sectioned copper pin was excavated, and a small copper perforated plate (Vulpe, 1957, fig.85: 5-6), and the copper fish-hook from Bernovo-Luka and Solončene, both on the Dniester (Passek, 1961 fig.9:5; fig.13:3). However, the large hoard of copper objects  
/and implements

and implements found at Karbuna near Kiev in a pot decorated in the Tripolye A style, which has been claimed as some of the earliest copper (Sergeev, 1962, 135-151), must be an example of the retardation of the Tripolye A style on the Dnieper, and is much more likely to be contemporary with the similar hoard from Habasesti on the Prut which is from the middle phase of the Moldavian Cucuteni/Tripolye culture (Cucuteni-A/Tripolye B1) (Dumitrescu, 1958, c, 265-296).

(B) Cucuteni A/Tripolye B (Middle Phase). At the beginning of the middle phase, the early Tripolye incised and channelled decoration continued in the eastern settlements of the Tripolye culture along the Dnieper and southern Bug rivers; the beginning of the middle phase in the western settlements of the culture, along the Seret, Prut and Dniester rivers, however, is marked by the appearance of painted decoration applied before firing on the fine pottery.

However, just as a time-lag is apparent between the settlements of the western and eastern regions of the culture, so it seems that the introduction of painted pottery, coming from south-east and central Rumania reached the settlements lowest down the Seret and Prut rivers, and the fashion gradually spread up these rivers and only appears in a rather more advanced form in the settlements of the Dniester basin.

The stratigraphy of Izvoare, on a terrace above a tributary of the Seret shows various stages in the introduction and evolution of the painted pottery of the Cucuteni/Tripolye culture (Vulpe, 1957, 32-37). The earliest layer (I 1) has

/material

material of the second phase of the Pre-Cucuteni culture, and layer I 2 has material of the third phase of the Pre-Cucuteni culture.

At Izvoare the development of the purely incised and channelled decoration is interrupted in layer II 1 by the appearance of painted decoration, on the fine ware, of the type known as Proto-Cucuteni, which as was shown in section 5, was developed in the south part of Moldavia, as at Stoicani; the thin lines painted in white on the red surface, which is sometimes burnished, are frequently combined with incised patterns and channelled patterns of the Pre-Cucuteni III style. The forms associated with this ware are also very similar to those of the preceding Pre-Cucuteni III types, but also include wide shallow dishes with thickened rims, typical of south Moldavia and north Muntenia (Vulpe, 1957, fig. 118: 1-4).

The stratigraphy at Izvoare shows that in the early part of layer III the white on red painted ware is the only type of painted decoration (Layer II 1 a), but that soon after its introduction it is excavated in association with another group of painted ware seen for the first time at Ariusd, and probably developed initially in Transilvania; this is the trichrome painted ware, consisting of black lines painted on the red matt surface, with the area between them alternately painted in white and left red. The patterns, and forms of the trichrome painted ware are very similar to those seen in south-east Transilvania, and include simple deep bowls with carinated or straight-sided upper parts; evolved forms of these include the deep bowls on small narrow concave disc bases (Vulpe, 1957, 165) etc.

/In the later

MAP  
VI

MAP  
VI

XV:2



In the later part of layer II at Izvoare (II 2), when the trichrome pottery increases and develops to the exclusion of the white-on-red bichrome style and painting combined with incised and channelled designs, the forms of the pottery increase even more in their variety. The patterns of this later Cucuteni A phase (A3) include designs borrowed from the incised patterns of the preceding phases, such as the idea of filling a band made of two solid lines with hatched perpendicular lines; thus the trichrome painted patterns consist of black lines on the original surface or a coloured slip, filled in with a solid third colour, or perpendicular lines painted in a third colour; whereas the earlier trichrome ware is predominantly black painted on the original red surface and filled in with white paint, the later trichrome ware includes also black lines painted on a white-slipped surface, with the space in between filled in by red paint.

The earliest phase with only the white on red decoration, known as Cucuteni A1 or Proto-Cucuteni rarely occurs in the more northern and eastern Moldavian sites; it is likely that contemporary with the development of the painted ware on the more western and southern sites of the culture, the majority of communities of the Prut and Dniester basins continued to decorate their pottery in the Pre-Cucuteni III style.

The phase known as Cucuteni A2 in which painting in the proto-Cucuteni style occurs along with painting in the early (Ariusd) trichrome style also hardly occurs in the eastern Moldavian sites.

/The earliest

The earliest important phase of painted pottery in the Dniester Tripolye settlements is in the third phase of the Cucuteni painted pottery phase known as Cucuteni A 3 or Tripolye B 1 in which only the evolved trichrome style of painted pottery occurs. Alongside the painted pottery of the Moldavian sites, the incised decoration continues to exist, especially on the coarser fabric, but never in combination with the painted designs (Chernush, 1962, fig.22).

The settlements of the Tripolye B1/Cucuteni A sites are situated predominantly on the higher terraces of the river valleys, although at the site of Cucuteni itself there is an example of the settlement with material of the Cucuteni A 2 phase (Cucuteni-Băiceni) which was situated on a lower terrace of the river, being moved during the following Cucuteni A 3 phase to a nearby high situation on the plateau, where the settlement is known as Cetașuia (Fort). (Petrescu-Dîmbovița, 1965, 157-183). A similar location of the settlements on higher plateaus and steep slopes is visible in the contemporary and later large settlements of the Southern Bug, such as Sabatinovka II and Kolomiščina and Vladimirovka.

In the settlements of this middle phase of the culture, surface houses with floors of the type known as ploščadki occur for the first time in Moldavia as at Nezvisko on the Dniester (Chernush, 1962, fig.17), Hăbășești on the Seret (Dumitrescu V 1955), Trușești on the Prut (Petrescu-Dîmbovița, 1957, 1-25; Petrescu-Dîmbovița and Florescu A. and M., 1962, fig.1) etc. The houses are basically rectangular, 5 - 8 m. wide, and

/ 10 - 12m. long

10 - 12 m. long, with one or two hearths in the interior, probably indicating that the original internal arrangement of the houses consisted of two or three rooms, and possibly representing the house of an extended family.

Evidence for the economy of the sites comes from the analysis of the animal bone material of Polivanov Yar II and III on the Dniester (Passek, 1961, 138,139): this shows that domestic animal bones make up an average of 60% of the total number of animal bones, which is a rather a higher proportion than in the early phase of the Pre-Cucuteni/Tripolye culture of Moldavia, as at Luka Vrublevetskaya. Of the domestic animal bones only 30% were of domestic cattle which is less than in the early phase; 20-25% are of pig, and sheep/goats and dog make up the remainder. The most important wild animals were deer, and wild pig; there is less evidence for an importance attached to fishing in the economy of this middle phase.

The flint blade industry includes evolved forms of the types seen in the preceding early phase; the long blades with sharp retouching down both edges, often formed into a point at one end, and with the bulb of percussion only rarely retained, are especially frequent; other types include the long wide end scrapers; the implements with sickle gloss continue to have the edge of the glossy area sharply retouched (Passek, 1961, fig.23; Chernush, 1962, fig.20).

Polished stone implements include especially the long rectangular or slightly trapezoid axe/adzes with a comparatively low plano-convex cross section. In this stage it becomes

/increasingly common

increasingly common for these to have secondary retouching by flaking. Perforated axes are also frequent.

Clay anthropomorphic figurines continue as an important feature in the material culture. Many of them are very similar to those of the Pre-Cucuteni III/Tripolye A examples consisting of a flat upper part with only a rudimentary conical head and arms, and exaggerated buttocks, and a single undifferentiated conical leg with the whole surface covered in incised decoration, as at Izvoare II (Vulpe, 1957, fig.228-229); there also occurs a more evolved type with a flat body and perforated arms, and a flat head with a pinched-out nose, and frequently with perforated eyes; the buttocks are also exaggerated, but the legs are often differentiated; the figurines are either undecorated or decorated by painting in the same style as the pottery (e.g. Petrescu-Dîmbovița, Florescu A. and M., 1962, fig.5:1; Vulpe, 1957, fig.224-225).

In this middle phase of the Cucuteni/Tripolye phase, which is contemporary with the main part of the Gumelnița culture in south Rumania and Bulgaria, copper becomes a common luxury; hoards, such as that from the site of Hăbășești on the Seret and Karbuna near Kiev have produced implements such as "chisels" as well as ornaments etc. such as pins and discs (Dumitrescu V., 1958, 265-296; Sergeev, 1962, 135-151). Similar implements have been found in settlements of the Tiszapolgar, Gumelnița, Salcuța cultures etc. in the circa-Carpathian area. For this reason this phase of the Cucuteni/Tripolye culture and the contemporary copper-using cultures have frequently been referred to

/as "eneolithic"



as "eneolithic" or even "chalcolithic". It is certain that these cultures represent communities with an economy which enabled them to live at a relatively high standard in large stable settlements, to develop advanced techniques in the manufacture, firing and decoration of pottery, and, in this way, to develop methods of manufacturing implements and objects of metal. The economy, however, was based much less completely on agriculture and breeding domestic animals than was that of the preceding earlier neolithic cultures; but it is perhaps in the varied source of food that the high standard of living was attained in this period in south-east Europe.

#### Summary.

It is beyond the scope of this thesis to discuss the latest development in the painted ware of Moldavia and the Ukraine, as well as the eneolithic painted ware cultures of south Rumania and Bulgaria. It is perhaps sufficient to have analysed the background and possible prototypes of the painted ware and other features of the material of the Tripolye/Cucuteni culture which appear in the preceding settlements of the central and southern part of Rumania.

There are two distinct styles of painted pottery typical of the early and middle stages of the Tripolye/Cucuteni cultures; the white on red burnished surface, combined with the channelled and incised patterns appears first, especially in the settlements of the western and southern part of Moldavia; this style appears to have been developed in the transitional area of south Moldavia/north Muntenia on a basis of the Pre-Cucuteni Boian

/and possibly

and possibly Hamangia cultures.

The incised patterns associated with this ware have been shown to be evolved principally from the disintegrated incised patterns of the Moldavian/Muntenian Linear Pottery culture, through the subsequent Boian/Pre-Cucuteni cultures. The channelled designs, on the other hand, are developed from the channelled/fluted decoration of the fine burnished ware of the Dudești culture which is related to the Vinča-Tordoș group of cultures. Contemporary with the early development of the painted ware in the south and west Moldavian sites of the Cucuteni culture, the incised/channelled decoration continued to predominate on the pottery of the north and east Moldavian sites, and those of the south-west Ukraine.

This far, therefore, the Linear Pottery culture of Moldavia had a great effect on the subsequent development of the incised decoration of the Cucuteni/Tripolye culture.

The second style of painted ware of the Cucuteni culture, which appears in the Moldavian sites slightly later than the white on red bichrome ware, excludes the bichrome, incised and channelled decoration and later becomes the dominant method of decoration on the pottery from the Dniester to the Seret; this style consists of trichrome painting in black and white on the red matt surface of the pot. It seems likely that the initial stages in the evolution of this style took place in the south-east Transilvanian sites such as Leț and Ariușd; prototypes for the trichrome style of painting occur in the Turdaș-Petrești sites of south-central Transilvania, such as Mihalț and Ocna /Sibiului;

Sibiului; as was shown in the previous chapter, the majority of the painted designs of the Turdaş-Petreşti culture are likely to be on a basis of the Turdaş culture, but by stimulus or influence from the painted pottery of the middle phase of the Linear Pottery culture of the Alföldi.

Thus the Linear Pottery culture of the Alföldi and of Moldavia are responsible indirectly or directly for a large proportion of the designs and forms of the Cucuteni/Tripolye group of Moldavia and the Ukraine.

It is more difficult to judge how far this indirect influence applies to other features of the material culture of the Cucuteni/Tripolye group. The ploščadki floors of the houses of the middle phase of the culture appear at a possibly slightly earlier date in the settlements of the Transilvanian Petreşti culture; they consist of solid baked clay floors made by covering a layer of logs with clay and the whole layer being set alight. This method of construction is most likely to have been developed from the houses with baked clay floors; there is no evidence for these in the Turdaş culture, or in the Linear Pottery culture of the Alföldi, although it frequently occurs in the settlements of the Vinča-Tordoş culture of Serbia, and the Linear Pottery settlements of the middle and lower Tisza; the only other evidence is in the Linear Pottery settlement of Nezviska on the middle Dniester, as described in Part II, Chapter 1. It is always possible, however, that this method, which occurs also in settlements of the Gumelniţa culture in Rumania as at Cascioarele (Dunitreşcu in discussion at the Institute of

Archaeology in București, June 1965), are a local feature developed from the surface houses of the Dudești-Boian type; although these are not built with clay floors, they are constructed predominantly of daub with a light wooden framework, as may be seen in the series of houses from the contemporary culture at Karanovo in south Bulgaria. It is difficult to make any definite statements on this question until more surface houses of the Turdaș-Petrești, Petrești, Dudești and, above all, the Boian/Pre-Cucuteni and Moldavian Linear Pottery cultures have been excavated.

The same applies to the evidence for the economy of the Tripolye/Cucuteni cultures. In the initial stage of Post-Linear Pottery development in Moldavia, the economy of the settlements shows marked differences from that of the Linear Pottery settlements in the high proportion of domestic animals, and especially cattle, and the decrease in domestic pig. It is impossible to judge, however, whether this is due to Dudești culture elements, since there are very few sites where a detailed analysis of the animal bone material is available. The abundant evidence from the later phases of development of the culture in Moldavia shows a certain amount of adaptation to different conditions of forest/steppe in the increase in hunting and fishing activities, as was seen in the Linear Pottery culture in this region.

The flint blade industry is one feature which does show direct similarities to the Linear Pottery culture in the importance of the long wide end-scrapers, and the long blades with sickle-gloss; /these latter,



these latter, however, develop independantly in the Tripolye/Cucuteni culture into the important group which combines sickle-gloss with steep retouching and the development of steeply re-touched pointed blades without the bulb of percussion; there are no microlithic elements evident in the material of the Cucuteni/Tripolye culture.

The polished stone implements and figurines all show strong elements of the Dudești culture through the Boian/Pre-Cucuteni cultures.

Burials, consisting of crouched inhumations, predominantly among the pits and houses of the settlements, accompanied by grave-goods such as a pot or polished stone axe are universal and follow the burial tradition of the neolithic cultures of central and south-east Europe.

### Chapter III

#### The effect of the Linear Pottery culture of south-west Hungary and north Yugoslavia (Croatia) on the incised ware of the later neolithic cultures of central and west Yugoslavia (Bosnia and the Adriatic coast)

The discussion of this question will necessarily be brief, firstly because the evidence of the Linear Pottery settlements in south-west Hungary and north Yugoslavia, as was shown in Part III, Chapter 1, is very incomplete, consisting mostly of surface finds; and secondly, because the distinction of the various cultural groups in the neolithic period in west and central Yugoslavia is still very much in the rudimentary stage, and their chronological position relative to that of the neolithic cultures of east, north-east and south Yugoslavia and the rest of south-east Europe is, as yet, only poorly defined.

The relative chronological position of the east Yugoslav sites (Serbia and Macedonia) was recently analysed in detail, and this has been used as a basis for analysing the material of the east Bosnian sites such as Gornja Tuzla and Varoš, whose material follows a similar pattern of development to that of the Serbian sites. (Milojčić, 1949a, 65-81; Srejšović, 1960, 5-19; Benac, 1961a, 58; 1961b, 71).

The material at Gornja Tuzla represents in its earliest layer (VI) the westernmost occurrence of painted pottery of the Starčevo type (Čović, 1961, 81-88). In its upper layers, (V - II) it represents the western periphery of the Vinča culture of Serbia, from the early Vinča-Tordoš phase (B1) to the late

/Vinča-Pločnik

MAP  
III

MAP  
IV

Vinča-Pločnik phase (d) (Čović, 1961, 88-121; Bernac, 1961a, 31-37).

The western part of Yugoslavia is divided into two distinct physical regions (Benac, 1961a):

(a) the mountainous interior

(b) the limestone Adriatic coast and islands.

1) The early development of the pottery-using cultures of western Yugoslavia.

A) Apart from the instances of Starčevo painted pottery in the east part of Bosnia, the impressed ware occurs on certain settlements on the Adriatic coast such as Smilčić (Batović, 1960, 5-26), Jamina sredni on the island of Cres and sites on the islands of Krk and Lošina (Miroslavlejić, 1959, 131-169; 1960, 204-218; 1962, 175-212), and Pelšac near Dubrovnik (unpublished in Dubrovnik Museum), and cave sites further inland such as Zelena Pečina (Benac, 1957, 80) and Crvena Stijena layer III (Benac and Brodar, 1958, 24); this has been regarded as representing the earliest pottery-using neolithic communities of west Yugoslavia; whether the pottery is associated with a food-producing economy has not been proved but large deposits of shells occur on all the sites.

The fabric of the impressed pottery is crumbly and soft, mixed with large pebble inclusions, and poorly baked, to a brown/buff colour. Forms include simple hemispherical or  $3/4$  spherical bowls, with flat, concave or disc bases; decoration is executed predominantly by impressing the trimmed or untrimmed edge of a shell including that of Cardium into the wet clay in /regular rows

regular rows, zig-zag patterns or haphazardly.

The flint blades associated with the impressed ware are well-made and include, especially, long blades with retouching down one or both edges; at Crvena Stijena there is strong continuity between the implements of layer III associated with impressed pottery and those of the preceding layer (IVa) which are not associated with any pottery; this is seen especially in the frequent occurrence of notched blades (Benac and Brodar, 1958, Pl.VII, Pl.X).

B) At Smilčić, where material of the "middle neolithic" Danilo culture is stratified above the impressed pottery, there is no evidence of a continuity either in the flint blade industry or in the pottery fabric, forms and decoration. The Danilo culture is distributed along the Adriatic coast and, sporadically in the islands (Benac, 1961a, 75-82). Very similar material has recently been excavated in the interior of west Yugoslavia at the site of Četići (Obre) near Sarajevo, where it is stratified below material of the "classic" Butmir type (Benac in discussion at Sarajevo Museum in June, 1965); it seems possible, from the obvious continuous development from this material to that of the "classic" Butmir culture, that this material as well as the material of the Danilo culture may be regarded as an early phase of the Butmir culture. However, the material develops also into the late neolithic culture of the Adriatic coast and the western part of Bosnia known as Hvar-Lisičići. It would perhaps be simpler, therefore, to refer to this material as the Danilo culture.

/The pottery



The pottery of the Danilo culture is of two basic types:

(a) fine thin ware with very fine mineralogical inclusions; it is fired to a light orange colour and given a white slip which is then burnished; the surface is painted in black/brown and red; the patterns are predominantly rectilinear although spirals do occasionally occur as at Danilo (Korošec, 1964, fig.69); the designs are made especially by bands of thin parallel black lines with the spaces in between alternately painted in red and left unpainted. Forms include wide sharp-angled biconical bowls with a straight or carinated upper part, hemispherical bowls, deeper globular or piriform bowls often on low cylindrical hollow pedestals etc.

(b) slightly coarser hard ware with gritty inclusions; it is fired a black/grey colour, and the surface, although not slipped, is frequently burnished. Forms include rounded biconical bowls, or carinated bowls, and globular pots; the pots of this group are frequently provided with a thickened beaded rim. The decoration of this ware is exclusively by incised patterns, although red and white encrusted paint is often applied after firing.

The patterns include spirals, combined with cross-hatching, or herring-bone pattern, and curvilinear designs made by bands of parallel incised lines close together.

(c) a third group of coarse kitchen ware, with large stone inclusions decorated by various methods of rustication including finger-and-nail-impressions and incised "net-patterns".

There is no evidence for surface houses from the settlements of the Danilo culture, although pieces of daub from the walls occur;

/Korošec

Korošec has interpreted the large number of pits found at Danilo as pit-dwellings (Korošec, 1964).

Although there is no detailed analysis of the animal bone material from any of the sites of the Danilo culture, a superficial examination of the animal bones from Smilčić shows that a large number are from domestic cattle, with some from sheep/goats. There are very few bones of wild animals, but fishing, including shell-fishing, appears to have played an important part in the economy (Batović, 1962, 31-112).

Flint blade implements include a rich variety of long blades with relatively steep retouching down both edges, some of which show a glossy area down one edge; also round scrapers, and tanged arrowheads, which are a very unusual feature in the blade industry of the neolithic cultures of south-east Europe. Obsidian occurs as small blades, but very infrequently.

The polished stone implements include oval or rectangular axe/adzes with a thick plano-convex or lens-shaped cross-profile; the examples with a flat cross-profile occur, but much less frequently. No perforated polished stone axes have been found in the settlements.

Clay figurines are not a common feature in the material of the Danilo, although they do occur as at Smilčić (unpublished in Zadar Museum) and Danilo (Korošec, 1964, fig.33: 1,4). A very distinctive feature of the culture is the occurrence of the so-called "cult-vessels" which consist of four cylindrical legs supporting a vessel with a large vertical or oblique mouth and a massive ring handle. (e.g. Korošec, 1964, fig.36).

/Similar examples

Similar examples to that from Danilo occur up the Adriatic coast as far as Trieste, at Smilčić (Batović, 1962, 31-112), and at the contemporary site of Kakanj in central Bosnia (Benac, 1961a, 44, Pl.9: 1-4).

The material of the Danilo culture has been divided into four phases by Korošec on a basis of typology (Korošec, 1964), and by Batović on a basis of the stratigraphy at Smilčić near Zadar (Batović, 1962, 31-112). The latter has shown that the painted ware appears at the beginning of the Smilčić settlement, and survives for the first three phases with very little evolution of forms or decoration, except that a degeneration of the quality of the paint is visible in the third phase prior to its disappearance in the fourth.

The incised decoration also appears in the earliest layer at Smilčić, although the decoration is comparatively simple and consists of incised spirals and triangles, often filled with red encrusted paint applied after firing. A gradual development in the forms and decoration of the incised pottery is visible, the climax of which is reached in the third phase, when new elements such as decoration in relief, and white encrusted paint also appear on the pottery. In this third phase also there is a great development in the polished stone and blade industry, with the appearance of obsidian and arrowheads.

The last phase shows a degeneration of all these features with the appearance of monochrome burnished pottery, beaded rims, and the development of the simple hemispherical and biconical forms.

/The relative

The relative chronological position of the Danilo material, and the four phases seen at Smilčić, is difficult to assess when so few features occur which relate it to the chronological system of east Yugoslavia. The last phase seen at Smilčić (IV) has definite analogies in the "late Neolithic" material of the island of Hvar and the inland site of Lisičići; in fact, the Danilo culture shows a gradual transition into that of the Hvar culture and undoubtedly provided most of the prototypes for that material.

There is no such gradual development seen in the initial phase of the Danilo culture which appears already fully developed; a hiatus in settlement represented by a sterile layer at Smilčić separates the material of the Impressed Ware from that of the earliest phase of the Danilo culture.

Korošec has stated that the four-legged "cult vases" or rhytons belong to the first phase of the culture; the nearest analogy to these outside Yugoslavia occurs at the Central Greek site of Elateia from the top the "middle neolithic" layer; (Weinberg, 1962, 172-196); Holmberg has claimed that the layer with the black-burnished ware similar to that of the Thessalian Larissa ware and early Vinča-Tordoš of Serbia has not been distinguished from the earlier Sesklo layer, and that it does exist at the top of Weinberg's "middle neolithic" layer and at the bottom of his "late neolithic" layer (Holmberg, 1964, 343-348). If we accept the hypotheses of Korošec and of Holmberg, the rhyton from Elateia, which is very similar to those of the Adriatic, must be contemporary with the early part of the Vinča-Tordoš culture (A/B 1); for this reason, always providing that

/the rhytons



the rhytons of the Adriatic are contemporary with that from Elateia, it is possible that the rhytons from Danilo, Smilčić and Kakanj, and, therefore, the earliest phase of the Danilo culture are also contemporary with the early Vinča-Tordoš culture; using this very weak evidence as a basis, we may also say the phases II and III of the Danilo culture, at the end of which the early development of the central Bosnian Butmir culture is also visible, is roughly contemporary with the later Vinča-Tordoš and early Vinča-Pločnik culture. This evidence is also supported by the early Vinča-Pločnik (C) elements in the "classic" Butmir culture.

Thus, the initial appearance of the Danilo culture would be contemporary with the beginning of the middle phase of the Linear Pottery culture of west Hungary; and the third phase of the Danilo culture, was contemporary with the late phase of the Linear Pottery culture of the central province.

The problem which remains concerns the origin of the various elements in the Danilo culture of the Adriatic coast and central Bosnia. There are four possible sources for cultural stimulus:

- (a) the preceding Impressed Ware settlements of the Adriatic coast.
- (b) the early Vinča-Tordoš settlements of east Bosnia and Serbia.
- (c) the Greek neolithic settlements by way of Albania and the coast.
- (d) the Linear Pottery settlements of Croatia and south-west Hungary.

As mentioned above, the Danilo layer at Smilčić is separated from the Impressed ware layer by a hiatus, and there seem little or no elements in the material of the Danilo culture which are

/inherited

inherited from the preceding culture, which must represent poor conserving communities, with an economy based on fishing rather than food-production.

The early Vinča-Tordoš settlements extend as far as the Drina river in east Bosnia, as at Goražde (Benac, 1959, 6-10), and the settlements of the Danilo culture of the Adriatic and central Bosnia hardly extend east of Sarajevo; there is no evidence for contact between the two cultures during the Vinča-Tordoš phase. The pottery forms, fabric and decoration are quite different from those of the contemporary culture of central Bosnia. It is difficult to judge if the other features of the material culture are as different since there is very little evidence for the economy of the Serbian Vinča-Tordoš settlements, and very little evidence for the surface houses of the Danilo settlements. The figurine, as far as one can tell from the few Danilo examples are not at all the same as the Serbian figurines, since the former have legs and arms realistically portrayed and not stylised. The flint blade industry is certainly quite different, with the frequent occurrence of arrowheads.

The painted ware is the feature which is most likely to be a southern element in the Danilo culture; the painted ware has its greatest analogies in the Ripoli and Capri painted ware of south Italy (Batović, 1962, 31-112), although they are more likely to be the result of a common origin in the preceding Greek painted ware, than the expansion or importation from Dalmatia to Italy or vice versa. Other features which may be the result of the same element are the realistic figurines and the four-legged rhytons.

legged rhytons. However, it is not proposed, in this study, to launch into a full-scale analysis of the Greek and Macedonian prototypes and south Italian analogies.

MAP III We are more concerned here with the possible effect of the north Yugoslavian and south-west Hungarian Linear Pottery on the forms and decoration of the incised ware of the Danilo culture of the Adriatic and central Bosnia. When this problem has been discussed previously, the "notenkopf" style of the central province and Bukk style of the eastern province of the Linear Pottery culture have more frequently been cited as providing prototypes for the incised decoration of the Danilo and Kakanj and later Butmir cultures, rather than the neighbouring Linear Pottery of south-west Hungary and north Yugoslavia (Benac, 1963, 25-39). As was described in Part III, Chapter 1, there are a number of sites with pottery of the early phase (Ib) of the Linear Pottery of the central province in south-west Hungary with a southernmost extension in the sites between the Sava and Drava rivers in east Croatia, as at Malo Korenovo and Budinsčina (Dimitrijević, 1961, 6-17). The decoration of the pottery of these sites consists of relatively wide incised lines in simple rectilinear and curvilinear patterns including spirals; typical forms included rounded biconical bowls and simple hemispherical bowls. In the period contemporary with the early part of the Danilo culture and the middle phase of the Linear Pottery culture of the central province, these settlements were isolated from the general evolution of the Linear Pottery of the central province, (for example decoration by the "notenkopf" style never occurs)

/and followed

and followed an internal development in this east Croatian/south-west Hungarian area which will be described in a later section.

It seems more likely that the pottery of these settlements, if any of the Linear Pottery settlements, provided the initial stimulus in the development of the Danilo incised spirals. It is interesting to note, in this context, that the polished stone axe/adzes of Malo Korenovo with their wide rectangular or slightly trapezoid shape and relatively thick plano-convex cross-section are very similar to the axe/adzes of the Danilo sites (Dimitrijević, 1961, Pl.III: 19-21). Perhaps it is permissible, in this context also, to indicate the possible similarities between the economic pattern of the Danilo culture as shown by the superficial examination of the animal bone material of Smilčić, and that of the middle phase of the Linear Pottery culture of the central province as shown by the analysis of the bone material of Győr and Pomáz, and discussed in Part I, Chapter 3.

C) There are two sites in central Bosnia with material belonging to the so-called Kakanj culture (Benac, 1961a, 41-45). The material of these two sites (Kakank and Arnautovci) is very similar to that of the early Danilo culture, as in the occurrence of the four-legged "Rhytons", but it lacks the fine painted pottery. The pottery includes a large proportion of coarse ware decorated with various forms of rustication especially finger-impressions, running the fingers across the pot when it was wet, and applied plastic bands.

The other group of pottery includes slightly finer ware

/similar



similar to the coarser ware of the Danilo material; this is decorated by incised lines in simple rectilinear and curvilinear patterns made by parallel lines, or in more complicated patterns such as cross-hatched hanging triangles. Forms include wide rounded bi-conical bowls, sharp-angled bi-conical bowls, some of which are on relatively low cylindrical hollow pedestals, and some on tall flaring half-solid pedestals, similar to those of the Vinča-Tordoš culture.

The flint blade industry is poor compared with that of the Danilo settlements, and contains no tanged arrowheads. Polished stone implements consist basically of the oval or rectangular axe/adzes with a high plano-convex cross-profile (Benac, 1956, Pl. I).

There are no surface houses associated with this material, or any evidence for the economy from the animal bone material. The material from Kakanj and Arnautovci gives the impression of a poor version of the Danilo material, although it contains none of the more evolved forms of decoration such as incised spirals and plastic spirals of the later phases, nor does it contain the painted pottery of the earlier phases. It has been interpreted as being contemporary or possibly partly prior to the initial appearance of the Danilo culture, and possibly contemporary with the later phases of the Starčevo culture (Benac, 1956, 78). It seems much more likely, however, to be contemporary with the earlier and middle phases of the Danilo culture of the Adriatic and central Bosnia, and, in fact, to be part of that culture.

2) Later development in the neolithic cultures of north and west Yugoslavia.

In the cultures which developed from the Danilo culture of Bosnia and Dalmatia and from the evolved Linear Pottery culture of Croatia, a much greater contact with the contemporary cultures of east Yugoslavia is visible than in the preceding cultures. The contact becomes especially evident in those cultures of north and west Yugoslavia which are contemporary with the first part of the Vinča-Pločnik culture (Vinča C) of Serbia; not only did settlements with this material and their influence extend further westwards, but conversely, the settlements with material of the west Yugoslav neolithic cultures and their influence spread eastwards so that the two cultures must have come into contact; settlements with mixed material occur in east Bosnia and east Croatia (Benac, 1959, 5-10).

The pottery of the early Vinča-Pločnik culture consists for the most part in a simple development from the forms, fabric and decoration of the Vinča-Tordoš culture, including three basic groups of fabric:

- (a) thick coarse ware decorated by finger-and-nail-impressions etc.
- (b) finer unburnished ware decorated by evolved forms of the "winkelband" designs including spirals and meanders, with stabs as well as dots filling the bands. The forms of this group include small globular pots with short necks, large globular pots with narrow cylindrical necks.

(c) fine black

(c) fine black/grey burnished ware, decorated by wide channelled or fluted lines in spiral and rectilinear designs, especially on the upper part of the pots; forms include especially the wide bowls with carinated or straight-sided upper part; pedestalled bowls are almost absent in this phase (Milojčić, 1949a, 73; Garašanin M., 1951a, 51-58).

This material appears in north-east Bosnia, along the Drina and Spreca, as at Gornja Tuzla, Donja Tuzla, Matić, Grbača and Varoš (Benac, 1961, b, 39-78).

B) North-west of these sites in north-east Bosnia and east Croatia, in the valleys of the Sava and Drava rivers are settlements with material belonging to the so-called Slavonian-Syrmian culture or Bapsko-Lengyel or Sopot-Lengyel culture (Benac, 1961a, 37-41); Dimitrijević, 1961, 18-22); the best documented sites of this culture are Donja Klakar and Donja Mahala on the southern bank of the Sava, and Letičani and Sarmatovci north of the Sava, as well as Bapska, Sarvas and other large tell sites along the Danube (Schmidt, 1945).

The forms of the coarser pottery include especially the small globular or rounded biconical pots with short straight necks or collars; they are decorated by incised bands that show elements of the Vinča culture in the "winkelband" design especially the spiral filled-in bands, and of the evolved forms of the Linear Pottery culture of south-west Hungary in the simple incised patterns; a third element is the middle and later Linear Pottery culture patterns of the lower Tisza basin, represented, for example, by the meanders made by bands of four or five parallel lines. These various patterns frequently occur on the same pot.

/In the north

In the north Bosnian sites, on the south bank of the Sava, there is more influence from the central Bosnian Danilo and later Butmir cultures seen, for example, in the inverted piriform pots with a small mouth.

The forms of the fine pottery include those very similar to the contemporary forms of east Yugoslavia, including wide bowls with a shorter carinated or straight-sided upper part; there are also forms which survive in this area from the preceding phase, and which were probably originally inspired by similar forms in the Vinča-Tordoš culture; these include especially the hemispherical bowls on tall flaring pedestals; in this phase for the first time the pedestals are perforated. The decoration of the fine ware is by deep fluted lines on the upper part of the pot, but it is more frequent for the fine pottery of this region to have an undecorated burnished surface.

Very similar pottery to that of the north-west Yugoslav Bapsko-Lengyel culture appears in south-west Hungary, as at Zengővárkony (Dombay, 1960a) and Villánykövesd (Dombay, 1960b, 55-70). On these sites it is clearly seen that the material of the Bapsko-Lengyel type represents the earliest phase in the development of the so-called Lengyel group of cultures which constitute the post-Linear Pottery cultures roughly in the central province.

The flint blade industry of the more southern part of the culture of the sites on the southern bank of the Sava as seen at Donji Klakar and Donja Mahala is very similar to that of the preceding Danilo and roughly contemporary Butmir cultures of

/central Bosnia,



central Bosnia, in that it consists especially of long blades with steep retouching down both edges, frequently shaped into pointed implements and barbed and tanged arrowheads; other blades are more like those of the Vinča culture with shallow retouching down one edge and the bulb of percussion retained.

Polished stone implements include wide trapezoid axe/adzes with a flat or slightly plano-convex cross-profile, as well as the narrower rectangular or almost oval implements with a thick plano-convex cross-profile; supplementary flaking frequently occurs round the edges of these implements.

There is no evidence for surface houses from the settlements of this culture, although rectangular houses with baked clay floors do occur in the contemporary settlements of the Vinča-Pločnik culture of north-east Bosnia, such as Varoš (Benac, 1961a, 109-110); however, the settlements with the culture mentioned above have only been excavated in a small area, or in excavations which were carried out in the last century, as at Donji Klakar. Similarly there has been no analysis of the animal bone material from any of the settlements.

It is interesting that no clay figurines have been excavated from the settlements, although they occur at Varoš in north-east Bosnia, and in large numbers in the roughly Contemporary Butmir culture.

C) As mentioned above, the subsequent development of the Danilo culture in central Bosnia, roughly contemporary with the end of the Vinča-Tordos (B 2) and beginning of the Vinča-Pločnik (C) culture of east Yugoslavia is represented by the Butmir culture.

/The settlements

The settlements of this culture are distributed especially along the river Bosna, and, in the lower part of this river, must have had a considerable effect on the Vinča-Pločnik and Bapsko-Lengyel cultures of the lower Drina (north-east Bosnia), and received influence from these settlements in return.

The pottery of the Butmir culture consists of two main types:

(a) fine black burnished ware with small mineralogical inclusions. The forms of this ware include the sharply-angled and rounded biconical bowls seen also in the Vinča and Bapsko-Lengyel cultures, as well as the inverted piriform pots with a small mouth; decoration of this fabric is by deep fluted lines as in the Vinča-Pločnik culture, and relatively fine incised lines in the same patterns as the coarser ware, and similarly frequently filled with red or white encrusted paint applied after firing.

(b) coarser buff material with large mineralogical and gritty inclusions; the surface of this ware is not burnished; the forms include small globular or rounded biconical pots as in the Bapsko-Lengyel culture, frequently with a short straight neck or collar; other forms include the inverted piriform bowls with a small mouth. Decoration of this pottery is basically incised although the patterns consist of two elements:

i) evolved forms from the preceding Danilo patterns; these include complicated spirals; the incised lines are generally deeper and more excised than those of the early Danilo material, often to such an extent that area between the lines is raised

/into a

into a negative spiral in relief; evidence for red encrustation is very common in the incised/excised lines.

ii) evolved forms from the "winkelband" or "filled-in bands" style typical of the Vinča and Bapsko-Lengyel cultures; the "winkelband" style of the Butmir pottery is more like that of the Bapsko-Lengyel culture of the Sava Basin, than that of the Serbian Vinča culture, as it consists of complicated spirals and rectilinear bands; and negative filled-in bands; a certain amount of disintegration of the "winkelband" patterns is visible in the Butmir pottery in the frequent disappearance of the solid lines which bordered the dots, and the substitution of haphazard strokes for the dots filling the bands.

Besides the encrusted red and white paint seen in the incised lines, there is also evidence on some of the Butmir sherds for the whole surface of the pot being covered with red paint applied after firing, as in the contemporary earliest phase of the Lengyel culture of west Hungary, Moravia etc. (Benac, 1952, 57-72; 1953, 1961a, 46-47; Korošec, 1955, ).

Other features in the Butmir culture show this same mixture of later Danilo elements and Bapsko-Lengyel/Vinča B2/C elements. As the site of the Butmir culture which has been most systematically excavated: Nebo one surface house was excavated, as well as three pits which have been interpreted as pit-dwellings (Benac, 1952, 13-14). The surface house consists of an area of thick baked clay 4.40 x 3.50 in area, and approximately 8 cm. thick; it seems very likely that this represents what was originally a rectangular house with a baked clay floor similar to /the contemporary

to the contemporary house of the Vinča culture at Varoš (Benac, 1958a, 5-22; 1961a, 109-110).

Evidence for the economy of the Butmir culture comes from the animal bone material of Butmir (Radimsky and Hoernes, 1895, 36-46) and Nebo (Benac, 1952, 27-28), although there is, as yet, no detailed analysis of this material; domestic animals include cattle, sheep/goats, pig and dog, and wild animals include especially roe deer and red deer.

The flint blade industry includes the same mixture of central Bosnian and Vinča elements seen in the Sava valley settlements such as Donji Klakar; implements include blades with one side retouched and the bulb of percussion retained, and blades with no bulb and steep retouching down both edges often shaped to a pint at one end; a large number of beautifully made pressure flaked barb-and-tang arrowheads also occur (Benac, 1952, 34-35); Pl.XXIII: 10-15).

Polished stone implements include a variety of long and short trapezoid axe/adzes with low and high plano-convex cross-profiles, and a smaller number of the narrower rectangular axe/adzes, and the ovoid implements with a lens-shaped cross-section; in this phase in central Bosnia, as also at Donji Klakar, perforated axes appear for the first time (Benac, 1952, 33, Pl.XXIII: 1-4).

The material of the Butmir culture is distinguished by a large number of clay anthropomorphic figurines. These show features from the preceding figurines of the Danilo culture in the occasional realistic representation of hands and arms curved

/round



round and supporting the breasts; the majority, however, show obvious affinities with those of the late Vinča-Tordoš and Vinča-Pločnik culture of Serbia, in the stylised representation of the body, the triangular or polygonal faces with eyes represented by an incised triangle etc. and the incised decoration on the body (Garašanin M., 1951a, 42-44, 61-64). The figurines of the Butmir culture, also show a certain amount of independent development which appears also in the figurines of the contemporary Vinča settlements of north-east Bosnia, such as Varoš (Benac, 1961a, Pl.25:1); this is seen especially in the realistic representation of the face (which may have occurred also on the figurines of the Danilo culture), such as the plastic modelling not only of the nose, but also of the eyes and mouth and hair (Benac, 1961a, 123-125, Pl.26; 1952, 73-80).

D) In the western part of Bosnia and the Adriatic coast, the Danilo culture retained its initial form for rather longer than in the central and eastern part of Bosnia, which was open much more to innovating influences from north and east. The development of the Lisičići culture and its coastal variant, the Hvar culture, therefore was rather later than the initial development of the Butmir culture. These two cultures are distinguished especially by a retention of many features of the Danilo culture, including painted pottery, an importance of fishing in the economy and a very fine blade industry (Benac, 1961a, 82-88).

The pottery of the Lisičići group consists of the same two groups as the Butmir culture, and most of the forms which occur in /central Bosnia;

central Bosnia; the chief difference in the pottery is that the incised decoration represents predominantly a degeneration of the Butmir "winkelband" patterns and late Danilo spiral and consists of patterns made by bands filled with incised hatching in curvilinear designs, especially on the upper part of the pot (Benac, 1958b, 45-56). Painting in red after firing frequently occurs in the incised lines as in the Butmir culture, as well as over the whole surface of the pot.

The pottery of the Hvar group contains very similar carelessly executed incised designs, but the material is also characterised by a great development in fine ware painted before firing in red, white, light yellow, and grey (Novak, 1959, 1962, ); patterns include especially spirals and curvilinear designs, which may quite easily be simple developments from the painted spirals of the preceding Danilo culture (e.g. Korošec, 1964, fig.69), although Novak has suggested that the Hvar painted patterns are imports or at least inspired by the designs of the Thessalian Dimini culture, with which they must be roughly contemporary, as was mentioned in chapter 1 (Novak, 1955, 51). The forms of the Hvar painted pottery include especially wide rounded biconical bowls with turned out or beaded rims.

Evidence for surface houses from settlements of the Lisičići group comes from the settlement of Lisičići itself, where two superimposed rectangular houses were excavated (Benac, 1958b, 19-20); these are represented by post-holes, and may indicate a predominantly wooden construction with the walls filled in with daub; there is no evidence for a baked clay floor as in the Butmir culture. The settlements of the Hvar group are almost

/exclusively from

exclusively from caves, with no evidence for surface houses.

The animal bone material from Hvar includes bones of domestic cattle, sheep/goats and pig, and a smaller number of wild animal bones such as roe deer and pig; as in the preceding Adriatic settlements there were large deposits of marine shells (Novak, 1955, 266-267).

The animal bone material from Lisičići there is a complete predominance of wild animal bones, especially red deer, and then wild pig, chamois, roe deer etc. A small number of bones were from domestic animals including possible cattle (Benac, 1958b, 83-89).

The flint blade and polished stone industry of the inland Lisičići group is much better developed than that of the coastal Hvar settlements, and consists of many similar implements to those of the Danilo culture, including, among the blades, long blades steeply retouched on both edges and often shaped into a point, long end-scrappers, and pressure-flakes barbed and tanged arrowheads; the polished stone implements include exactly the same variety as the Butmir settlements, except for the occurrence of a long flint flaked axe with a triangular cross-section; the perforated axes tend to be more solid and larger than those of the Butmir culture (Benac, 1958b, Pl.I-IV).

No figurines have been found in association with material of the Hvar/Lisičići group.

/Summary

### Summary.

Although pottery decorated by shell-impressions appears in west Yugoslavia, inland and along the coast at a time which must be roughly contemporary with the early neolithic Starčevo culture in east Yugoslavia there is no evidence that this culture represents actual agriculturalists. The first positive evidence for a food-producing economy is seen in the culture known as the Danilo culture, which appears stratified above Impressed Ware material and below material of the late neolithic Hvar culture along the coast and below material of the "classic" Butmir culture inland in central Bosnia.

There is no evidence for contact between the early Vinča settlements of east Bosnia, and those of the Danilo culture in west Bosnia. The pottery contains elements which relate it more to the evolved Linear Pottery incised ware of east Croatia, which could have penetrated to central Bosnia from the Sava and up the Bosna river; the other element which is possibly evident in the Danilo culture is a southern Mediterranean element shown especially in the painted pottery and which has been variously interpreted as coming from north Greece via Albania and the Adriatic, or from south Italy.

The flint blade industry of the Danilo culture would seem to be partly derived from that of the indigenous Impressed ware; but there are intrusive or at least new, elements such as the appearance of pressure flaked arrowheads, although these are more typical of slightly later developments. The polished stone axe/adzes are very similar to the evolved examples of the /late Linnear



late Linear Pottery settlements of Croatia.

With the development and expansion of the Vinča culture westwards and the expansion of the Danilo settlements eastwards, a developed form of the Danilo culture appeared in the central Bosnian settlements known as the Butmir culture which incorporated many of the late Vinča-Tordoš/early Vinča-Pločnik features into the material culture. Chief among these was the appearance of the "winkelband" style among the incised designs, the pot forms an increase in figurines, and probably the development of a more settled economy based on cattle breeding, although there is no direct proof of this; houses with a baked clay floor are also likely to be inspired by Vinča examples.

A disappearance of the Danilo painted ware is evident in the Butmir culture, but many features in the flint blade industry and the incised designs link it with the Danilo culture.

A similar mixed culture developed north of the Sava in east Croatia, in the basin of the river Sava and, to a certain extent, south-west Hungary, on a basis of the evolved Linear Pottery of this region, and with a strong influence from the late Vinča-Tordoš and early Vinča-Pločnik culture; this development, known as the Bapsko-Lengyel culture, shows a great increase in the "winkelband" designs in the incised pottery, but often in combination with Linear Pottery patterns; it is possible that this material also affected the designs of the Butmir pottery. It is certain that this material made a great contribution to the late neolithic Lengyel culture of west Hungary, east Austria

/and central

central Czechoslovakia.

On the Adriatic coast and west Bosnia, the evolution of the Danilo culture was rather slower than in the east, and the Vinča elements are much weaker; the true "winkelband" style is very rare in the material of Hvar and Lisicici cultures, and figurines do not occur at all. Many features continue unchanged from the Danilo culture, especially in the Hvar culture on the coast, such as the painted pottery, the flint pressure-flaked arrow-heads and steeply retouched blades, the large deposits of shell fish; the incised patterns however, consist more of degenerate Butmir/Vinca/Danilo patterns than a positive development. The Lisicici group inland presents an altogether degenerate aspect of the Butmir and Hvar cultures with its careless incised decoration, absence of painted designs and figurines, and predominance of wild animal bones in the bone material.

Thus the Linear Pottery of east Croatia is likely to have influenced or stimulated the patterns of the Danilo culture in the first place, and, possibly, those of the Butmir culture through the Bapsko-Lengyel culture which itself represents a mixture of later Vinča and evolved Linear Pottery elements.



As expressed in the introduction, the ultimate purpose of the thesis has been to demonstrate that the effect of the Linear Pottery culture on the subsequent development of the later neolithic cultures of south-east Europe, which were for the most part outside the original area of its settlements, was much greater than has generally been recognised; the direct and indirect influence of the Linear Pottery culture on the south-east European settlements came from three basic sources:

- a) the Linear Pottery culture of Moldavia
- b) the Linear Pottery culture of the Great Hungarian Plain
- c) the Linear Pottery culture of North Yugoslavia.

To show how the material of these three areas fits, in time and space, in to the general picture of development and inter-relationships of the Linear Pottery cultures, a greater part of the thesis was concerned with a study of the origin and evolution of the Linear Pottery cultures, and an overall history of their development and expansion.

Features which are basic in the material culture, which have direct prototypes in the early neolithic cultures of south-east Europe, include the fine pottery with a red slip and black-painted patterns of exactly the same type as the Serbian Starčevo and transitional Starčevo-Körös type; the macrolithic flint blade industry with little retouching along the edge and with the bulb of percussion retained; the polished stone axe/adzes of trapezoid shape and flat cross-section; the economic pattern based on food-production by domestic animals and cultivated plants.

Although there is no direct evidence for a food-producing economy in the earliest Linear Pottery settlements, it seems very unlikely, from the supporting evidence for actual colonisation from south-east Europe, that the Linear Pottery settlements represent acculturation and assimilation to the more developed innovating cultures further south.

Features which represent adaption of the material culture of south-east Europe to the rather different physical conditions in central temperate Europe, as described in the introduction, include the development of houses of a predominantly wooden construction with clay on a heavy wooden framework; houses of a long rectangular shape instead of the small square houses, and possibly representing an extended instead of a nuclear family house; an economic pattern involving shifting settlements, a



three thick parallel lines.

Although there is a certain amount of time-lag from east to west, the expansion in this initial phase must have been relatively fast, as is shown by the Carbon 14 dates and the uniformity of the material. The material of the early phase is considered contemporary with the end of the Starčevo culture and the beginning of the Vinča culture in Yugoslavia (Starčevo III-Vinča A) although the earliest material of the Alföldi and the Bükk mountains is likely to be slightly earlier. The Körös and Criş cultures were existing at a period parallel with this early phase, but in the areas transitional between the two ecologic regions of Mediterranean south-east Europe and temperate central Europe; their material accordingly exhibits features of conservatism with very little internal development.

Evidence from samples analysed by the Carbon 14 method shows the following dates for Linear Pottery sites of the early phase and contemporary early neolithic sites in south-east Europe;

South-east Europe:

Karanovo I culture:	<u>Azmak</u>	4808 ± 100 b.c. Bln 267	(Radiocarbon VII, 1966)
"	"	4702 ± 150 b.c. Bln 224	"
Karanovo II	<u>Karanovo</u>	4623 ± 100 b.c. Bln 201	"
"	"	4550 ± 150 b.c. Bln 234	"
"	"	4857 ± 100 b.c. Bln 152	"
Veselinovo culture	"	4410 ± 100 b.c. Bln 158	"
Starčevo culture	<u>Vršnik III</u>	4915 ± 150 b.c. H ?	(Milojčić, 1958, 44)
	<u>Gornja Tuzla VI</u>	4690 ± 75 b.c. GRN 2059	(Covic, 1961, 132-3)
Körös culture	<u>Katalszeg</u>	4420 ± 100 b.c. Bln 86	(Radiocarbon VI, 1964, 316)
	<u>Kotacpart</u>	4500 ± 100 b.c. Bln 115	"
	<u>Gyalaret</u>	5140 ± 100 b.c. Bln 75	"

Linear Pottery cultures (early phase)

N.E. Hungary (II)	<u>Korlát</u>	4490 ± 100 b.c. Bln 119	(Radiocarbon VI, 1964, 316)
Moravia, C.S.S.R. (Ib)	<u>Mohelnice</u>	4395 ± 100 b.c. Bln 102	"
	(Ia) <u>Žopy</u>	4480 ± 100 b.c. Bln 57	"
Thuringia, DDR (Ia)	<u>Eitzum</u>	4360 ± 200 b.c. Bln 51	"
	"	4430 ± 210 b.c. H 1487/985	(Witt, 1960)
Bavaria, DBR (Ib)	<u>Friedburg</u>	4170 ± 100 b.c. Bln 56	(Radiocarbon, 1964, 310)
	(Ib) <u>Irlbach</u>	3395 ± 100 b.c. Bln 85	" (contamin.)
S. Holland	(Ib) <u>Geleen</u>	4412 ± 70 b.c. GRN 995	(Science 128, 1958)

## 2) The middle phase of the Linear Pottery cultures

A great expansion of the settlement area and an increase in the density of settlement is associated with the internal development of the pottery decoration and forms of the middle phase of the culture. This is also the period when the contacts with and influence on neighbouring cultures by the Linear Pottery cultures reached a maximum.

Settlements of the Linear Pottery cultures increased along the Rhine valley and became consolidated in the loess plains of Hesse, Thuringia, Saxony, Bohemia, Moravia and Slovakia; the most important expansion was to the regions north and east of the Carpathian massif, in south-east Poland along the Vistula valley, and sporadically further north along the lower Oder and Vistula; from the Vistula valley, the upper and middle Dniester valley was settled, and from here the expansion continued westwards towards the Reut, Prut and Seret valleys of Moldavia, and sporadically back across the Carpathians to the south-east corner of Transilvania.

In Poland, and the Ukraine and Moldavian SSRs, the Linear Pottery settlements represent the earliest agriculturalists in those regions, but the Linear Pottery material of the Prut and Seret valleys in north-east Rumania has been found stratified above material of the early neolithic Criş culture, and must represent a secondary agricultural "colonisation".

In the middle phase of the evolution of the Linear Pottery cultures, the close uniformity of pottery forms and decoration is no longer visible, since the rates and direction of development varied with differing external contacts and influence. It is possible to recognise local groups by their pottery decoration rather than by any other aspects of the material culture which all retain their uniformity. The regional groups include:

A) Nuclear region --- Alföldi (east Hungary) and the Tisza basin, and north-west Rumania.

B) Eastern province --- N.E. Hungary, east Slovakia

C) Central province --- W. Hungary, E. Austria, W. Slovakia, Moravia

D) Supplementary expansion: S. Poland, W. Ukraine, Moldavia, N.E. Rumania

D) West-central province --- Bohemia, Saxony and Thuringia, Bavaria.

E) Western province --- W. Germany (Rhine valley and Hessen), Dutch and Belgian Limburg, E. France.

The various pottery styles of each region have been described in detail in Part III, Chapter 2. In general, one may say that the western province is characterised by the filled-in bands style of decoration, the west-central province by the filled-in bands style known as "pattern 200" and the later

"notenkopf" style; the central province by the "notenkopf" style with a local variation in the eastern part of the province in the Želiezovce style; the western province is characterised by the development of the so-called Bukk style.

The nuclear region is rather more complex, since it is open to greater influence from the contemporary Vinča-Tordoš culture of Serbia and the Banat region. The interior of the Great Hungarian Plain shows a retention of the tradition of decorating pottery by painted patterns, before firing, in black and occasionally white; the middle Tisza valley is characterised by rectilinear incised decoration in a style frequently referred to as the Tisza culture. In the lower Tisza valley, the same style of incised decoration is associated with sherds decorated in a combined incised/burnished/red painted after baking style known as the Szakalhat-Lebő style, which represents a mixture of Linear Pottery and Vinča-Tordoš elements. Similar mixed Vinča and Linear Pottery elements occur on a large number of sites in the Banat area of Rumania, Hungary, and Yugoslavia.

Cultures related to the Vinča-Tordoš culture of east Yugoslavia absorbed the early neolithic Criș and Karanovo I cultures in south Rumania and Bulgaria, and settlements with their material occur throughout these regions at a period contemporary with the settlements of the Linear Pottery culture. There is no evidence in south Rumania and Bulgaria, however, of contact between the Linear Pottery cultures and the Vinča/Dudești/Vădastra I/Veselinovo cultures; the only evidence for contact, as mentioned above, is in the Banat region, where pottery decoration of the Linear Pottery type, which absorbed the Körös culture and styles of pottery, occurs relatively far south.

Evidence from Carbon-14 samples shows an approximate date for this phase of 4200-4000 b.c.:

south-east Europe

Vinča-Tordoš culture      Vinča (end A)      4240 ± 60 b.c. GRN 1546 (Radiocarbon V, 1963)

Linear Pottery culture (middle phase)

Eastern province (IV)      Kečovo (Domica)      4130 ± 75 b.c. GRN 2435 (Radiocarbon VI, 1964)

Central province

Hungary      Zalavár      4230 ± 100 b.c. Bln 87      "

Austria      (III) Mold      4040 ± 160 b.c. Bln 58      "

(II) Pulkau      4265 ± 100 b.c. Bln 83      "

(III) Winden am See      3990 ± 100 b.c. Bln 55      "

"      3870 ± 100 b.c. Bln 107      "



## West-central province

E.Germany	(III) <u>Dresden(Nickern)</u>	3995±100 b.c.Bln 73(Radiocarbon VI	
	"	3865±100 b.c.Bln 77	" 1964)
	(II) <u>Westeregeln</u>	4095±100 b.c.Bln 42	"
	"	4190±100 b.c.Bln 92	"
	"	4250±200 b.c.GRN 223	"
	<u>Zwenkau(Harth)</u>	4210±70 b.c.GRN 1581(Radiocarbon V	

1963)

W.Germany	<u>Wittislinden</u>	4080±110 b.c.GRN 265(Milojčić,	
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Western province 1958,414)

W.Germany(III)	<u>Müddersheim</u>	4190±90 b.c.H ? (Schietzel,1965,	
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126)

Holland	(III) <u>Elsloo</u>	4130±70 b.c.GRN 2310(Radiocarbon V	
---------	---------------------	------------------------------------	--

1063,176

"	"	4200±70 b.c.GRN 2160	"
(II)	"	4370±90 b.c.GRN 2159	"
"	"	4320±85 b.c.GRN 2164	"
(II)	<u>Geleen</u>	4217±70 b.c.GRN 996(Science,128,	

1958)

	<u>Sittard</u>	3835±210 b.c.GRN 422(Science 127,	
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1958)

"	"	4145±160 b.c.GRN 320	"
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3) The Late Phase of the Linear Pottery Cultures

There is no visible expansion of settlement associated with the late stages in the evolution of the Linear Pottery decoration and forms. The late phase of the culture is characterised by internal development of the pottery into smaller local groups and a gradual disintegration of the "classic" Linear Pottery incised decorative styles.

It is in this period, however, that the ultimate subjects of this thesis occur; that is, the development of the incised and painted pottery of the late neolithic cultures of south-east Europe, whose initial stimulus came from the pottery styles of the middle phase of the Linear Pottery cultures.

1) The painted pottery of the Transilvanian Turdaş-Petreşti culture has been shown to be stimulated predominantly by the painted pottery of the middle and later Linear Pottery settlements of the Great Hungarian Plain in east Hungary and north-west Rumania; the majority of features of the material culture of the Turdaş-Petreşti settlements, however, are developed from the preceding Turdaş culture, which is a local development from the Banat



Vinča-Tordoš culture.

The Turdaş-Petreşti painted ware includes especially patterns painted in red on a white-slipped ground, as well as black and red on white, and black and white on orange; the red or brown on orange becomes the dominant style of decoration of pottery of the succeeding Petreşti culture, which may, therefore, be said to be the result of a mixture of Linear Pottery and Vinča (Turdaş) elements.

The Turdaş-Petreşti material is associated with sherds of the second phase in the development of the Boian/Pre-Cucuteni culture; the climax in the development of the Petreşti culture is likely, therefore, to be rather earlier than the middle phase in the development of the eneolithic Gumelniţa and Cucuteni/Tripolye cultures.

ii) The subsequent development of the Linear Pottery culture in Moldavia and Muntenia shows an amalgamation of the disintegrated Linear Pottery elements with those of the south Rumanian/north Bulgarian Dudeşti culture, which is related to the Vinča-Tordoš culture of Yugoslavia. The pottery of the resulting Boian/Pre-Cucuteni culture is decorated by burnishing and fine channelling as in the Dudeşti culture, and by incised patterns which are clearly derived from those of the east Rumanian Linear Pottery culture. The early phases in the development of the Boian/Pre-Cucuteni cultures shows relatively uniform material throughout Moldavia, Muntenia and the south-east corner of Transylvania; the easternmost occurrence of this material is at the site of Floreşti on the river Reut in the Moldavian SSR.

In the later phases, however, regional variation occurs; the Pre-Cucuteni III/Tripolye A incised ware, which predominates in Moldavia and the Dniester basin, follows a rather different evolution from that of the later Boian settlements of north Muntenia and the Dobrogea and north Bulgaria. In the late Boian settlements of north Muntenia and the Dobrogea, the incised ware is associated with painted ware, with the patterns painted in white on a dark red burnished ground; it seems most likely that this style developed from the late Boian graphite-painted patterns. Similar white on red painted patterns occur in association with Pre-Cucuteni III incised pottery on a few of the Moldavian sites.

In the south-east corner of Transylvania, the white on red painted ware is associated with painted ware of a different style and texture; this is the thicker trichrome ware of the Ariusd type, which is thought to be derived from the trichrome ware of central Transylvania, and would be approximately

contemporary with the Petrești culture.

The trichrome painted style becomes the dominant method of decoration in the succeeding Cucuteni A2-3/Tripolye B1 culture of Moldavia and the Dniester basin, in which copper was a common luxury. The contemporary Gumelnița culture of south-east Rumania and Bulgaria is characterised by pottery decorated by graphite-painted patterns.

Thus the Linear Pottery culture of east Rumania was responsible for a large element in the pottery decoration of the Boian/Pre-Cucuteni cultures in the same region, and, especially in north-east Rumania, for other aspects of the material culture, such as houses, flint implement types, and possibly economy of the Pre-Cucuteni/Tripolye A culture. If one carries indirect influence one stage further, it is possible to say that the dominant decorative style of the subsequent Cucuteni A/Tripolye B1 culture, that is, the trichrome painted ware, was developed, via the Ariușd pottery of south-east Transylvania, from the central Transylvanian Turdaș-Petrești pottery, which was itself originally stimulated by the Linear Pottery painted ware of the Great Hungarian Plain. At this stage, however, any "influence" from the Linear Pottery culture becomes far too indirect and remote, and is almost meaningless.

iii) A similar situation exists in the later neolithic developments in Bosnia in north-west Yugoslavia; settlements with material of an earlier phase of the Linear Pottery culture of the central province occur as far south as the Sava river, and survive contemporary with the Vinča-Tordoș culture. The subsequent Bapsko-Lengyel culture, which later contributes to the formation of the "Lengyel" eneolithic cultures, and is distributed in the Sava and Drava basins of north-west Yugoslavia, is certainly the result of surviving Linear Pottery elements and intrusive early Vinča-Pločnik elements.

It seems likely, however, that the effect of the Linear Pottery culture in Croatia was also felt south of the Sava in Bosnia, and that it was responsible for a certain amount of the incised decoration of the pottery of the Danilo culture which occurs along the Adriatic coast and inland along the Bosna river; the incised ware is associated with painted ware which continues into the late neolithic Hvar culture of the Adriatic coast; the inland Butmir culture, however, which is also a development from the Danilo culture, does not have pottery decorated by painting before firing; moreover, many of the incised patterns are inspired not only by those of the preceding Danilo culture but also by the contemporary Vinča-Pločnik culture, whose sites were distributed east of those of the Butmir culture.

Thus, at a period contemporary with the Vinča-Tordos culture, there seems to have been strong contact or influence from the Croatian Linear Pottery settlements southwards to the Bosnian Danilo settlements; at this time, the Vinča settlements were confined to north and east Serbia. With the expansion of the Vinča settlements westwards during the early part of the Vinča-Pločnik (C) culture, and the Danilo settlements eastwards, the Linear Pottery elements in Bosnia and Croatia tended to be absorbed.

Evidence from Carbon 14 analysis of samples from the later neolithic sites of south-east Europe shows an average date of 3900 - 3700; whereas those from samples from the fully eneolithic settlements are approximately 3700 - 3500 b.c.:

Late neolithic:

south-east Europe

Vinča-Pločnik(C) culture:	<u>Banjica</u> (endC)	3760± 90b.c.	GRN 1542	( <u>Radiocarbon V</u> ,1963
	<u>Gornja Tuzla</u>	3630± 60b.c.	GRN 1974	"
	<u>Vinča</u> (endC)	3895± 160b.c.	GRN 1537	"
Hamangia culture	<u>Hamangia</u>	3930± 70b.c.	GRN1986	"
Maritsa culture	<u>Azmak</u>	av.3810±128b.c.	(Radiocarbon VIII,1966)	
(cf.Boian II/III				

Linear Pottery culture (late phase) and stickbandkeramik culture (early phase)

E. Hungary	<u>Tiszapolgar</u> (Csoszhalom)	3895 ± 60b.c.	GRN 1993	( <u>Radiocarbon V</u> , 1963)
E. Germany	<u>Zwenkau</u> (Harth)(stbk)	3820 ± 120b.c.	K 555	( <u>Radiocarbon II</u> , 1960)
	"	"	3950 ± 100b.c.	Bl 66 ( <u>Radiocarbon VI</u> , 1964)
Holland	<u>Elsloo</u> (IV)	4105 ± 80b.c.	GRN 2884	( <u>Radiocarbon V</u> , 1963)





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<u>A Mora F. Muz. Evk.</u>	A Mora Ferencz Múzeum Evkönyve	Szeged
<u>Anat. Studies.</u>	Anatolian Studies	Ankara/Istanbul
<u>Arb. u. Forsch. Ber. Sachs. Bod.</u>	Arbeits- und Forschung-Berichte Bodendenkmalpflege.	Sachsische Berlin/Leipzig
<u>Arch. Austriac.</u>	Archaeologica Austriaca	Wien
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<u>Dolg. Szeged</u>	Dolgozatok	Szeged
<u>Folia Arch.</u>	Folia Archaeologica	Budapest
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